September 1961

BUSINESS AUTOMATION

Home of the Army Dollar

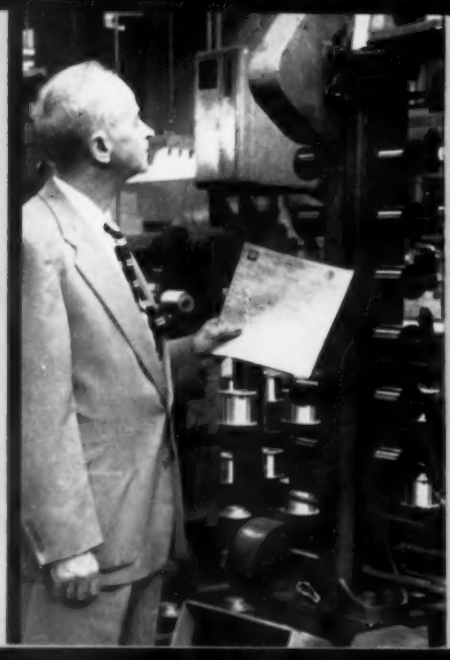
page 26

ERMA Comes Of Age

page 20

An Electronic Rx

page 37



One-Day Delivery With ADP

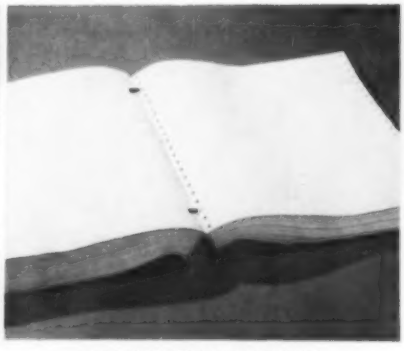
page 32

an end to fumbling fingers—lost minutes—slipping pages

(The NEW ACCO PLASTIC POST BINDER for MARGINALLY PUNCHED FORMS)

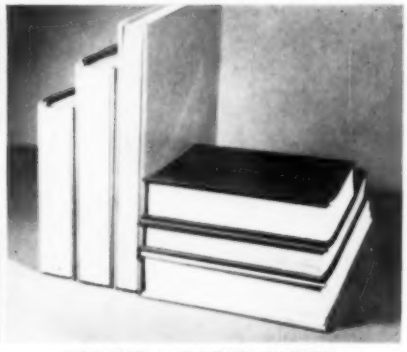
LOADS FASTER, LOCKS BETTER

Loads or unloads from front or back. Smooth posts slide in easily, then grip securely in slip-proof steel lock that works at a finger's touch.



NO WASTED MARGINS

Even when you load to full 6 inch capacity, the pages lie flat when binder is open. No hidden entries. Holds burst or unburst forms.



STACKS & RACKS EASIER

No protruding posts or bulging lock mechanism. Tough, economical pressboard is ideal for desk or shelf. 32 sizes. 12 colors aid coding.

LOOK FOR THE RED POSTS –YOUR GUIDES TO QUALITY AT LOW COST

Acco Products, A Division of Natser Corporation, Ogdensburg, N.Y. ■ In Canada: Acco Canadian Co., Ltd., Toronto ACCO

For More Information Circle Reader Service Card No. 151

PRESENTING
THE FIRST REALLY **NEW**
OFFICE COPIER
IN YEARS:

The Bruning Duet

With Bruning's new dual-purpose Duet (really *two* machines in one) you have a desk-top photocopier that makes black-on-white copies of everything written, printed, typed, drawn, photographed. *There is nothing the Duet can't copy*...all types of paper, two-sided documents, materials of every color, even ball point pens.

But that's only *half* the Duet story.

Bruning's *diazo* half of the Duet (a mere push of a button puts it into production) lets you run off as many copies as you wish at a *cost-per-copy that can't be equaled* (1¢ for materials, letter-size copies).

You can have a Duet demonstration...right in *your* office, on *your* office forms...by filling in the coupon.

Don't delay; do it today. Get your Duet demonstration right away ...and be money ahead in a matter of months.

NOT ONE MACHINE, BUT TWO... WITH TWICE THE ADVANTAGES TO YOU!

It's a Diazo machine unequaled for low-cost copies.

It's a Photocopy machine that copies everything.

CLEARLY, YOUR CHOICE IS **BRUNING**

CHARLES BRUNING COMPANY, INC.
1800 West Central Road, Mt. Prospect, Ill.
In Canada: 103 Church St., Toronto 1 **BA-9**
☐ I'd like a Duet demonstration, right away.

Name.....*Title*.....
Company.....
Address.....
City.....*County*.....*State*.....

For More Information Circle Reader Service Card No. 152

WHAT... NO STAMPS?

With all the "super market" sales of control panels you almost expect to get trading stamps. Not from MAC Panel. No stamps! Value? That's another story, strictly a MAC Panel story. You want the best panel value for your money. Some think buying the cheapest is the way. But we think it's wise to look beyond initial price. Consider performance; year in, year out. Being tab men, we know the use and abuse our products will get. That's why we make them to last. Another thing. We're interested in your needs today, of course. But your needs tomorrow are even more important. Overnight service? Happens all the time. We make our products better *before* you need them. Making the very best control panels is our business . . . our primary business. Next time you go shopping, check beyond the purchase price. Make sure you'll get all the service you deserve. You can rely on control panels and wires labeled MAC Panel. Don't expect stamps . . . just honest to goodness value.

MAC PANEL

Division of Adams-Millis Corporation

MAC PANEL COMPANY, High Point, North Carolina

Representatives throughout the United States, in Canada, Latin America and in Europe

BUSINESS AUTOMATION

Sept., 1961
Vol. 6, No. 3

Reporting and interpreting for management on ideas, developments, applications, results and impact of business automation in commerce, industry and government.

20 **ERMA Comes of Age**
By Robert Forest
A pioneer system becomes fully operational at The Bank of America.

26 **Home of the Army Dollar**
By Donald Young
The Army Finance Center uses a large-scale computer to save tax dollars.

32 **Automated System Makes One-Day Shipment Possible**
Now that Phelps Dodge has broken the paperwork barrier, wire shipments move quickly.

37 **Prescription for Hospital's Billing Problem**
Complications caused by various hospital insurance plans have been eliminated by Syracuse Memorial Hospital.

44 **Insurance Firm Uses Duplicator, Ends Tie-Ups**
Delays in procuring vital legal documents have been offset by producing low-cost duplicates.

46 **Utility Will Use Magnetic Ink on Customers' Bills**
News Feature

50 **IBM Typewriter Offers Numerous Innovations**
Product Preview

52 **Computer Device Records Bank Transactions**
Product Preview

56 **Use Automatic Equipment for Mass Mailings**
Product Preview

8 Quotes
14 Letters
16 Random Access
18 Publisher's Desk
61 Showcase
68 On Request
70 News
73 Business Calendar

Editor
Arnold E. Keller

Managing Editor
Donald Young

Manager,
Eastern News Bureau
Warren C. Rockwell

Manager,
Western News Bureau
Robert Forest

Assistant Editor
William Christian

Art Director
Leonard Schimek

Manager,
Service Bureau
Richard Johnson

•

Circulation Manager
Robert Marx

•

Editorial Consultant
Arthur Gould

•

Publisher
Charles W. Gilbert

Published by
OA Business
Publications, Inc.
John A. Gilbert,
President

BPA

EDITORIAL OFFICES

600 W. Jackson Blvd.
Chicago 6, Ill
DEarborn 2-3206

155 Fifth Ave.
New York 10, N. Y.
ORegon 4-6660

83 W. Sierra Madre
Sierra Madre, Calif.
ELgin 6-1035

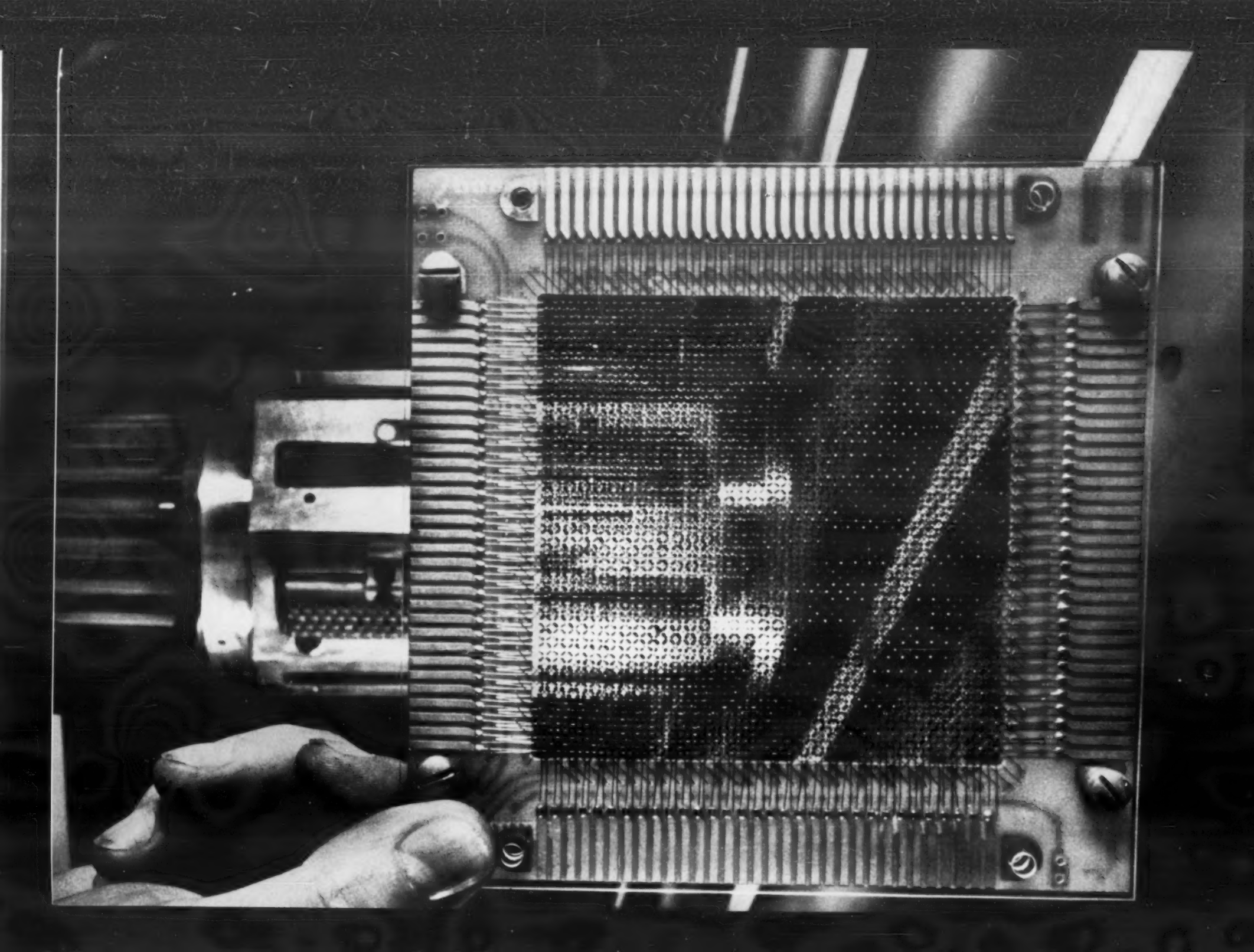
BUSINESS AUTOMATION is published monthly and © copyrighted 1961 by OA Business Publications, Inc., 600 W. Jackson Boulevard, Chicago 6, Illinois. Accepted as controlled circulation publication at Chicago, Illinois, and Lafayette, Indiana.

Subscription Rates: United States, one year, $5; two years, $8. Canada, one year, $6; two years, $10. Pan American and foreign, one year, $12; two years, $20. Single copies: U. S.—75c; all other countries—$1.50.

Change of Address: Send new and old addresses (preferably with a BA label), including postal zone numbers, to Circulation Department, BUSINESS AUTOMATION.

Receipt of changes by the 10th of the month will assure correct addressing of next issue.

Postmaster: Send notices to BUSINESS AUTOMATION, 600 W. Jackson Boulevard, Chicago 6, Ill.



Another from Univac!

Univac merges drum and core memory in a powerful medium-scale system—the new Solid-State II Computer—to bring you lightning speed and unprecedented economy.

Some medium-scale computers emphasize "speed." Others "economy." The UNIVAC® Solid-State II Computer sets new high standards for both.

A radical departure from conventional computer design, it combines *two* types of internal memory storage in a single, extremely versatile tape system. Drum storage for large program capacity . . . core storage for latency-free data processing.

Result: A fusion of speed and economy never before possible in a medium-scale computing system.

The UNIVAC Solid-State II Computer even rivals larger, more expensive systems with its remarkable operating speed. Using core memory, it trims memory access time to 1.5 microseconds per digit. It's two, three, even four times faster than other computers in its class!

Economy is outstanding, too, thanks to the large internal memory. Its drum stores 96,800 digits, and its core another 14,080 digits . . . enough to handle the most complex business applications. Huge data accumulation jobs, such as sales analyses or year-to-date payroll figures, fall well within the scope of one-run processing.

In short, the UNIVAC Solid-State II Computer is the most powerful computer in the medium-scale class today. Your local Univac representative has all the details; why not call him today.

Compare the features of the new UNIVAC Solid-State II Computer:

14,080 digits of core memory • 96,800 digits of drum memory • two tape synchronizers • twenty tape servos • nine index registers • multiword transfer from drum to core and from core to drum • full alpha-numeric compare.

UNIVAC

DIVISION OF SPERRY RAND CORPORATION

For More Information Circle Reader Service Card No. 154

AVERY TABULABELS®

The original self-adhesive, pin-feed labels for data processing use. 1. Self-adhesive – four times easier to apply. 2. Precision die-cuts – just peel and press in place. 3. Pure white, smudge-proof stock – looks better, never smears. 4. Clean punched pin-feed holes – no "confetti". 5. No bent edges or "dog-ears". For addressing, filing, coding and countless other uses.

WRITE TODAY FOR FREE SAMPLES

AVERY Avery Label Company – A Division of Avery Adhesive Products, Inc.
[illegible] S. California Ave., Monrovia, California

Circle Reader Service Card No. 155

Now you can write your own specifications with versatile Shelby Card Sets!

Gone are most of the limiting mechanical restrictions usually associated with tab card sets. **Now**... a whole new latitude of specifications that makes it possible to incorporate the features **you** want, including Shelby's exclusive double-stub feature shown above (in either single set or bound book form). Your nearby Shelby Representative has the facts—will be glad to help you develop a more efficient and effective tab card system. Call him now or write for informative literature and samples:

THE SHELBY SALESBOOK COMPANY • SHELBY, OHIO

Circle Reader Service Card No. 156

"Quotes"

Scanning the news for interesting comments on the field of business automation.

"To keep pace with the mounting demand, it soon will be necessary to have computers with hundreds—even thousands—of times the capacity of the huge machines now in existence. It probably is not an exaggeration to say that the present rate of scientific and technological progress will not be maintained unless such computers are developed."—*From an article in "Scientific American" by William B. Ittner III and C. J. Kraus.*

"Why automation? Why technological progress? The answer: we need it.

"The world's population in the '60's will go from 2.9 to 3.5 billion. China alone will add from 12 to 20 million people a year.

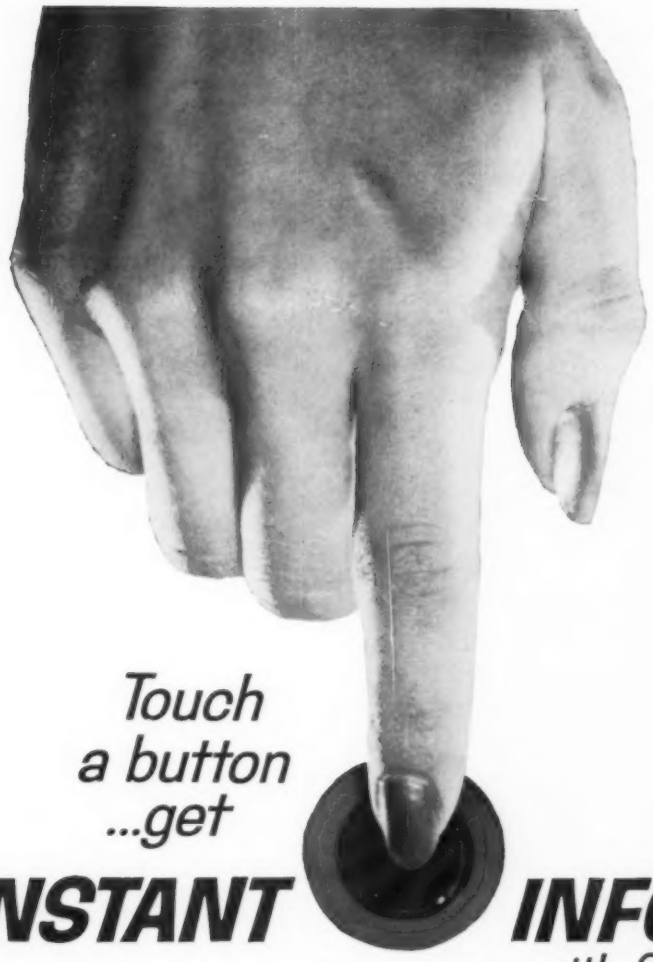
"The whole world will need new methods, new speed, new foods just to breathe and move—and offer hope instead of bitterness to the new millions."—*Victor Cohn in a series of articles appearing in the New Haven (Conn.) Register.*

"In the relentless endeavor for higher productivity, you and I may find the most startling advances will come not from automation, per se, but from improvements in relations between coworkers 'on the line,' between workers and supervisors, and within top management. If we can learn to profit from fragmentary advances in the field of human relations, we will see a new standard of living in our nation, a higher plane of compensation, a shorter workday and more leisure time."—*Brig. Gen. F. J. Kendall, U. S. Army.* (For more details on the Army attitude toward automation, see "Home of the Army Dollar," page 26.)

"To work toward total systems, you must start by programming workable subsystems—but always work toward their eventual integration into major corporate systems.

"Too much emphasis is often placed on doing a specific job with a specific piece of hardware, instead of analyzing the basic information needs so as to be certain unnecessary data and reporting are not carried over by default from a manual to a mechanized system."—*James M. Ewell, vice president, manufacturing and employe relations, Procter & Gamble.*

"If I make a statement about someone, you may or may not believe it. If I write it in an article, you'll believe it more. In a book, it becomes nearly sacrosanct. But if the statement comes from a computer—mama mia, it's like coming from God!"—*From a speech to the Society of Technical Writers and Publishers by Bernard Benson, president of Benson-Lehner Corp.*



Touch a button ...get

INSTANT INFORMATION!

with 3M Microfilm Products

BRAND

Records, facts, figures—any information is available in seconds at the touch of a button with 3M Microfilm Products. 3M makes it so easy to put the magic of microfilm to work cutting the costs of paperwork—speeding business communications—saving valuable space—in short, making filmwork easier, faster, less costly than paperwork. Find out now how you can put microfilm to work—get instant information—with

TAKE A LOOK—
at the enlarged microfilmed information on the bright viewing screen of the THERMO-FAX "Filmac" Reader-Printer. Touch a button and...

TAKE A COPY—
in seconds of any information you want in 8½ x 11 inch size. The "Filmac" Reader-Printer gives you an exact, clean copy.

3M MICROFILM
BRAND
PRODUCTS

MINNESOTA MINING AND MANUFACTURING COMPANY
ST. PAUL 6, MINN. ...WHERE RESEARCH IS THE KEY TO TOMORROW

MINNESOTA MINING AND MANUFACTURING COMPANY
DEPT. FBX-91 ST. PAUL 6, MINNESOTA

Please send me facts about how I can get Instant Information with 3M Microfilm Products.

Name_____
Title_____
Company_____
Address_____
City_____ Zone____ State_____

For More Information Circle Reader Service Card No. 157

Office Automation Applications

The only looseleaf handbook containing actual in-depth case studies in all phases of Business Automation, Data Processing and Systems.

OFFICE AUTOMATION APPLICATIONS is devoted to studies of actual working EDP installations in every phase of industry, commerce and government. This two-volume set of over one thousand (1,000) 8½ x 11 fact filled pages, is collated in an attractive, blue vinyl, hard cover. Both volumes are completely updated and can be kept current with an exclusive monthly service available by subscription.

PARTIAL TABLE OF CONTENTS

- General considerations
- Systems approach to automation
- The feasibility study for office automation
- Physical facilities
- Selecting, training and organizing computer personnel
- Programming the data processing system
- Principles of operations research
- Role of the consultant in EDP

CASE STUDY SECTIONS

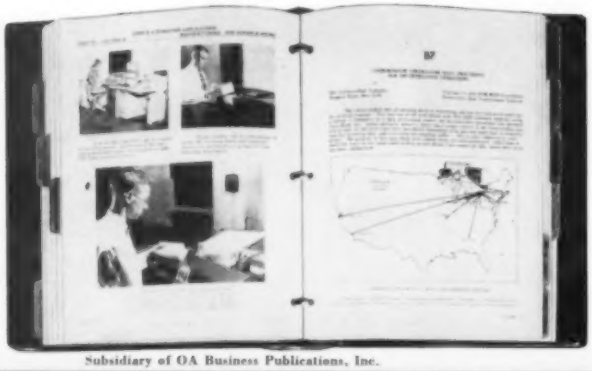
Manufacturing
Petroleum Products
Finance & Insurance
Public Utilities
Retail & Wholesale
Government
Publishing
Small Business

In the fast moving automation field new applications are constantly being developed for equipment now in use as well as newer equipment being installed. Every executive in the field must keep abreast of these new applications to benefit from the operational experiences of others.

OFFICE AUTOMATION APPLICATIONS will give you the latest up-to-the-minute case studies that have proven successful. From the partial table of contents, you can quickly see how this looseleaf handbook is an invaluable aid to intelligent appraisal of new methods and procedures for the most challenging field in business today.

You can't afford to be without OFFICE AUTOMATION APPLICATIONS. To receive your two-volume set simply fill out the attached order card. Your set of OFFICE AUTOMATION APPLICATIONS will be sent to you for a 10 day free examination.

OFFICE AUTOMATION APPLICATIONS contains case histories on:



- Material Control
- Production Control
- Inventory Control
- Order Entry
- Billing
- Freight Movement
- Payroll
- Data Communications
- Statistical Analysis
- Local Government Procedures

Subsidiary of OA Business Publications, Inc.

AUTOMATION CONSULTANTS, INC.
155 FIFTH AVENUE, NEW YORK 10, N.Y.

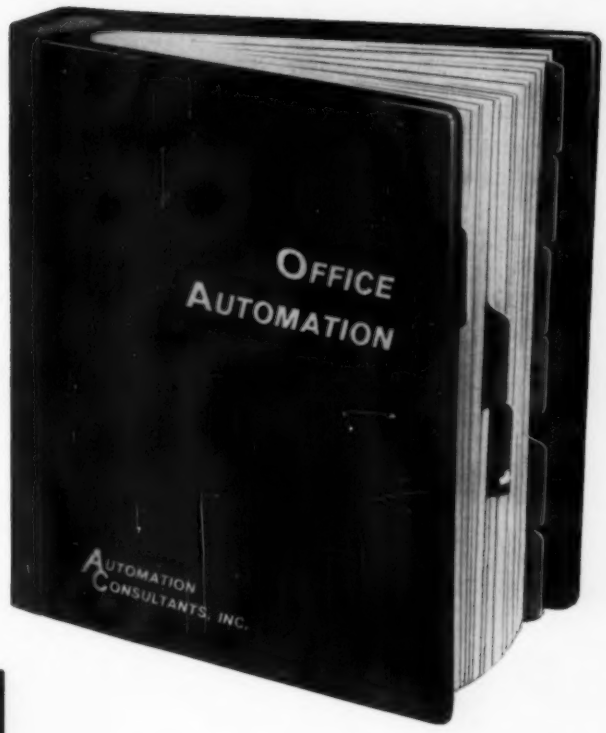
Office Automation Handbook

The only looseleaf handbook which contains all data processing equipment information currently available.

OFFICE AUTOMATION is a looseleaf handbook that is:

• CLEAR • CORRECT

• CONCISE



Expert editors have digested and translated the specification manuals and other technical literature to give you current, up-to-date information. OFFICE AUTOMATION handbooks make it possible for you—the busy executive—to become acquainted with *all* of the data processing equipment which is currently available.

In this fast moving field of business automation and data processing, bound editions become quickly outdated. With OFFICE AUTOMATION you will receive an up-to-date handbook containing hundreds of descriptive pages on the latest IDP/EDP equipment. This manual reports and describes in detail the most recent developments in business automation, data processing, business communications and specialized systems equipment. OFFICE AUTOMATION handbook is your personal catalog of all available equipment. There is no need for numerous publications on your desk. Your copy of OFFICE AUTOMATION, with the addition of the monthly updating service, will enable you to work with one reference manual with the assurance that it at all times contains the latest information on office automation and data processing.

You can receive your looseleaf copy of OFFICE AUTOMATION in a new, green vinyl hard cover, by simply filling out the attached order card. Mail the card and we will send your copy for a ten day free examination.

OFFICE AUTOMATION contains chapters on:

- **Punched card accounting systems**
- **Electronic computers**
- **Medium and small scale computers**
- **Electrical communications and how they assist office automation**
- **Descriptions of native and common language machines**
- **EDP memory systems, magnetic tape handlers and filing devices**
- **EDP printers for computer output-descriptions, illustrations and comparative chart**

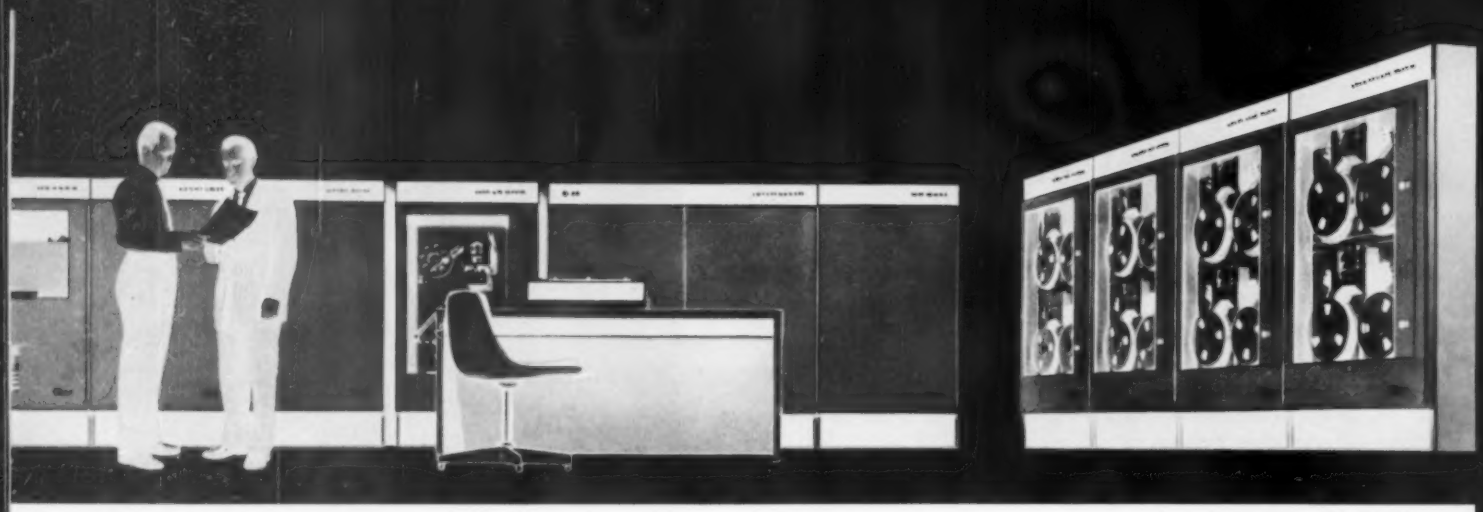
Other chapter headings

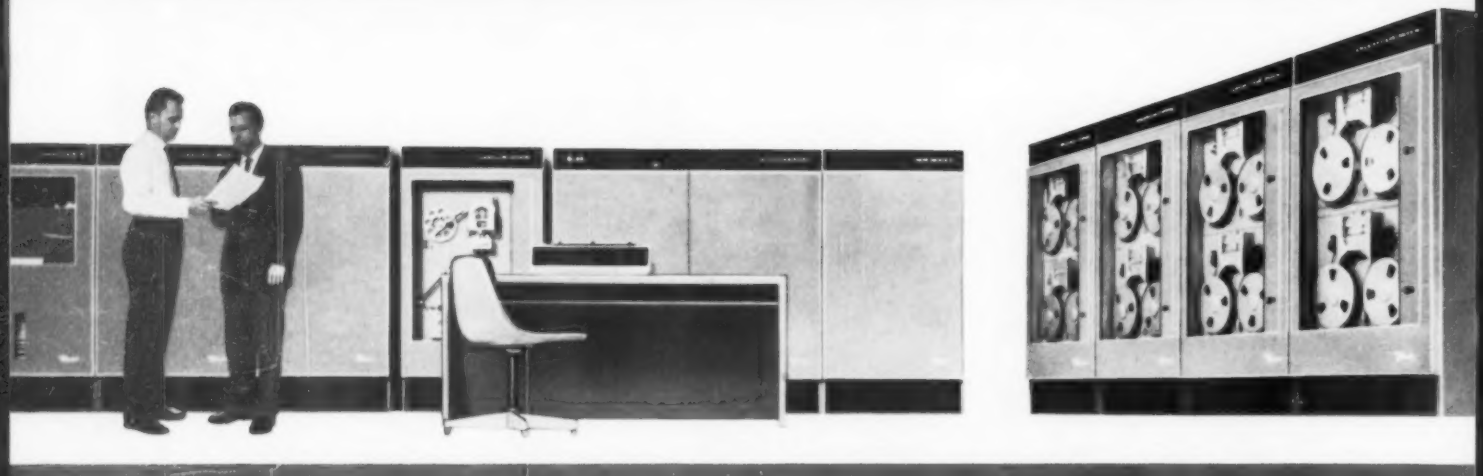
- **How Is a Computer Programmed?**
- **What Computers Can and Cannot Do**
- **Points To Be Carefully Watched When Acquiring a Computer**
- **Should Electronic Equipment Be Purchased Or Leased?**
- **Helpful Reading Material On Electronics Conferences, Exhibits, Seminars, Schools and Films of Interest**

Subsidiary of OA Business Publications, Inc.

AUTOMATION CONSULTANTS, INC.

155 FIFTH AVENUE, NEW YORK 10, N.Y.





DOUBLE YOUR COMPUTING PRODUCTIVITY WITH THE

Bendix G-20

With the Bendix G-20 you are a two computer company. Incorporating both commercial and scientific data handling capabilities, the G-20 computing system permits all functions of your organization—engineering and administration, manufacturing and marketing—to meet their combined data processing needs in a single cost saving move. ▪ The G-20 contains a complete automatic programming "package"—including algebraic and business-language compilers which allow engineers and EDP personnel to write computer programs quickly and easily . . . in the natural language of the problem. The G-20's "packaged intelligence" masterminds the automatic scheduling of multiple problem processing—commercial and scientific intermixed—and maintains maximum system use and efficiency. ▪ And your G-20 configuration can always **match exactly** the changing requirements of your particular computing/data processing "mix"... assuring maximum utilization of your specific system. ▪ Consult your own engineers and methods people. They'll recognize the multiple-purpose capabilities of the Bendix G-20 . . . and the budget wisdom of using one computer to handle the data processing demands of your entire organization. ▪ For application bulletin "A Solution to the Profit Squeeze," write:

Bendix Computer Division
DEPT. U-32, LOS ANGELES 45, CALIFORNIA

For More Information Circle Reader Service Card No. 158

NOW COPY on the GO!

ANKEN ATTACHÉ

The world's only photocopier designed to travel!

Yes — you *can* take it with you. To meetings, on office calls, to job sites, into libraries, aboard planes and trains — *anywhere!* The amazing Anken Attaché makes all the crisp, sharp photocopies you need of reference data, literature, lists, blueprints, charts — anything printed, written, drawn, typed, photographed! And it makes them on the spot right where and when you need them! And if copying from books is a regular must, there's a model that does that, too — without damaging pages or binding. There's much more to tell. Use the coupon to get the full story. Do it now!

LIGHTWEIGHT! Tote it anywhere — only 12½ lbs.
HANDSOME! Natural luggage finish — in brown.
COMPACT! Just 17½" x 12¾" x 4¾".

MAKES COPIES OF ANYTHING . . . ANYWHERE FOR: traveling business executives • insurance agents • lawyers • engineers • chain store management • architects • union management • advertising men • field researchers • investigators • many, many more! Ideal for inter-office use . . . students . . . municipalities . . . others! Makes a welcome gift!

MAIL COUPON NOW!

Transcopy, Inc., Dept. BA-9, Newton, N. J.

I like the idea of the Anken Attaché. Tell me more!
_____Send me literature _____Set up demonstration

Name_____

Company_____ Phone_____

Address_____

City_____ Zone____ State_____

ANKEN

TRANSCOPY INC.
A Subsidiary of
ANKEN CHEMICAL AND FILM CORP.
NEWTON, N. J.

For More Information Circle Reader Service Card No. 159

You Get Things Done With Boardmaster Visual Control

★ Gives Graphic Picture of Your Operations—Spotlighted by Color
★ Facts at a glance — Saves Time, Saves Money, Prevents Errors
★ Simple to operate—Type or Write on Cards, Snap in Grooves
★ Ideal for Production, Traffic, Inventory, Scheduling, Sales, Etc.
★ Made of Metal, Compact and Attractive. Over 500,000 in Use

Complete price **$49.50** including cards

FREE 24-PAGE BOOKLET NO. AB-50 Without Obligation

Write for Your Copy Today

GRAPHIC SYSTEMS

Yanceyville, North Carolina

Circle Reader Service Card No. 160

finding and filing *takes just Seconds*

with BARKLEY TAB GUIDES

Modern offices use Barkley Tab File Guides because they make the job so easy. How? Well, each tab is both angled and magnified—takes only a glance to find the file you want. And Barkley Tabs are durable—stand up under constant use for years. The next time you make up your supply list . . . *be sure to add Barkley Tab File Guides . . . at the top.*

At all leading stationers.

C. L. BARKLEY & CO.

1220 W. VAN BUREN ST. • CHICAGO 7, ILL.

Circle Reader Service Card No. 161

Letters

Dear Sir:

The April 1961 issue of BUSINESS AUTOMATION sent to the President has been brought to my attention. I have read the thought-provoking article "Automation—The Job Maker" and the related editorial.

I was particularly interested in the occupations in which there are current or anticipated shortages. Counselors, employment interviewers and placement officers in State Employment Offices throughout the country bring this kind of information to the attention of persons who have the aptitude for and interest in taking training for work in the growing EDP field.

The Department of Labor publishes occupational information on a continuing basis. For example, in 1960 the Bureau of Employment Security issued a booklet entitled "Career Guide for Demand Occupations" and more recently issued new job information in publications entitled "Technical Occupations in Research, Design and Development Considered as Directly Supporting to Engineers and Physical Scientists" and "Occupations in Electronic Data Processing Systems," which provide job descriptions for use in counseling and placement work.

Many technological developments require greater skills from the labor force and displace those with lesser skills. That is one reason why the number of school drop-outs is a matter of concern. The public Employment Service, as well as the schools, are increasingly aware of the need for a high school education for more youth to help them meet the current demands of industry and business.

The State Employment Service Offices have cooperative arrangements with over 21,716 high schools to provide counseling, testing and placement service to over 500,000 graduates entering the labor market and to dropouts. This service is expected to be extended to more students during the coming school year. Also, every effort is made to encourage drop-outs to remain in school, and if part-time employment will help make this possible such job finding assistance is attempted. With the cooperation of employers, labor and of publications such as yours, the public Employment Service offices can bring information on training needed to more job seekers and will encourage them to prepare for new and growing opportunities.

William U. Norwood, Jr.
Assistant Director
U. S. Department of Labor
Bureau of Employment Security

Dear Sir:

Once again, as you did in June 1959 with "A Case of Missing Management," you strike the right note in "Crisis in Machine Accounting," June 1961.

With your permission to reprint the first article, we made considerable distribution of it to your regular readers and to others who should be aware of its message. We'd like to do the same with the new one.

Lewis F. Seaman
Sales Manager
Monitron Service Corp.

Dear Sir:

Just recently our company purchased an IBM 1401. For the August issue of our bi-monthly house magazine, we plan a story about the new data processing system. For illustration, we would like to use the cartoon on page 23 of your June issue. May we have permission?

G. W. Lambrecht
Manager, Administrative Services
Mallinckrodt Chemical Works
Uranium Div.

Dear Sir:

I want to congratulate you on the outstanding piece of work which appears in the April 1961 issue of BUSINESS AUTOMATION entitled "Automation—The Job Maker."

Recent public pronouncements having to do with the impact of automation on workers, clearly indicates the need to draw a sharp distinction between the impact of automation on the production worker and the impact of automation on the white collar or office worker. In my opinion, your article makes a major contribution in this area, at a particularly crucial time.

W. T. Cavanaugh
Executive Director
National Office Management Assn.

skeptical about computer claims?

There's one best way to separate fact from fiction . . . double check the RCA 601 against EDP systems costing far more.

Quite naturally we're a little partial to the RCA 601. We know what went into creating it, and we know what it will do. But, frankly, we'd rather that you didn't take our word for it. Instead, we'd much prefer to have you put it to the most rigid comparison you can conceive . . . for the biggest business or scientific operations. Compare it for everything you might ever want in an ultra-high speed computer . . . and let the RCA 601 speak for itself. Here are a few of the facts you'll discover . . .

Multiple Processing . . . Through its "overlap" capability (often called simultaneity), the RCA 601 can time-share process any number of independently written programs, the only limit being the memory capability and the peripheral equipment you employ. Even more important is the efficiency with which these programs can be processed, and the 601's built-in protection against program destruction.

Simultaneity Control . . . The 601 automatically controls optimum time sharing of the input/output devices required for a particular program, with those of other programs running concurrently. Total computer running time is reduced and peripheral equipment may be used to fullest capacity, at top speed.

Operating Speed . . . The 1.5 microsecond memory cycle of the RCA 601 is the fastest available in any general purpose computer. Tape speeds run up to 120,000 characters per second, 180,000 digits per second, in self-checking operation. Variable Data Organization (down to individual bit groups) adds additional speed and capacity.

For Even More Speed . . . Power is greatly increased, without reprogramming, through conversion to the RCA 604 Computer which provides floating point arithmetic, both binary and decimal, single and double precision, faster staticizing times, and faster address-modification times.

See for yourself! You'll find that the RCA 601, with its many options, is in every way a super computer that will breeze through the most massive or complex engineering or scientific computations. And while you're checking, why not talk to RCA EDP users? You'll find them in virtually every branch of business and government. For information write: RCA Electronic Data Processing Division, Camden 8, New Jersey.

RCA

The Most Trusted Name in Electronics

RADIO CORPORATION OF AMERICA

For More Information Circle Reader Service Card No. 162

the Computer Center

offers

Computer Time and Services

- Complete Packaged Application Services
- Program Assembly and Testing
- Computer Time with or without assistance
- IBM 650, 1401, and 1410 as well as collateral equipment available

Whether you have a computer, are in the planning stages, or desire to utilize the latest electronic equipment without investing in an installation—write

the Computer Center
A DIVISION OF GENERAL MERCHANDISE COMPANY
207 North Milwaukee St., Milwaukee 1, Wis.
TELEPHONE BR 3-1401

Circle Reader Service Card No. 163

IBM 1401
PROGRAMMING
(Course 102)
PRACTICAL TRAINING
for Card, Magnetic tape and
MICR models IBM 1401

PROGRAMMING
FOR BUSINESS
COMPUTERS
(Course 101)
PROGRAMMING
THEORY
with case problem practice in
practical accounting applications

Over 5 years experience training programmers for business with proven Home Study Training Courses.

Free Catalogue available. Write . . .

Business Electronics Inc.
Education Department
420 Market St.
San Francisco 11, Calif.
Accredited Member National Home Study Council

Circle Reader Service Card No. 164

Random Access

Information bits from the editors' memory files

A Memory of Death

A Univac computer is helping to save babies' lives in Philadelphia by analyzing the medical mistakes that result in infant deaths. The pilot study project involves 91 hospitals and is directed by Dr. Sydney H. Kane, a pediatrician and mathematician. Source data for the computer is prepared by the doctors, who complete a code sheet on every obstetrical case. Information includes the mother's condition, complicating diseases and the procedures used by the doctor. The baby also is described in coded detail.

Cards are punched from the code sheets and the computer (machine time is donated by Remington Rand Univac Div.) prepares an analysis of each hospital's obstetrical record, comparing it with the combined report of all 91 hospitals in the study.

In one hospital, the new system and some self-policing cut the death rate from 34 to 15 deaths for each 1,000 live births—seven points below the national average rate. In another case, the report disclosed that one hospital had a 15 percent death rate in breech babies, as compared with the over-all average of only four percent. The report alerted the hospital of serious trouble and enabled it to find and correct the condition.

Dr. Kane would like to include all of the nation's four million annual births in the project. He believes the "memory of death" report can revolutionize the practices of obstetrics and newborn pediatrics. "If we can change the infant death rate by less than one percent, we can save 13,000 babies a year," says Dr. Kane.

The computer project was set up with a $46,000 grant from the American Medical Assn. Records presently cover only 52,000 births. Dr. Kane hopes to have the AMA increase the allotment to $600,000, which would cover some 500,000 deliveries.

Faster Flip Flop

Computer control switches that will theoretically operate in a billionth of a second may soon be possible, according to Dr. Benjamin Lax, of MIT's Lincoln Lab. Reporting in Science Digest, Dr. Lax says that such switches, made from antimony and bismuth, brittle semimetals, will reduce operating costs and open up an area for advances in electronics.

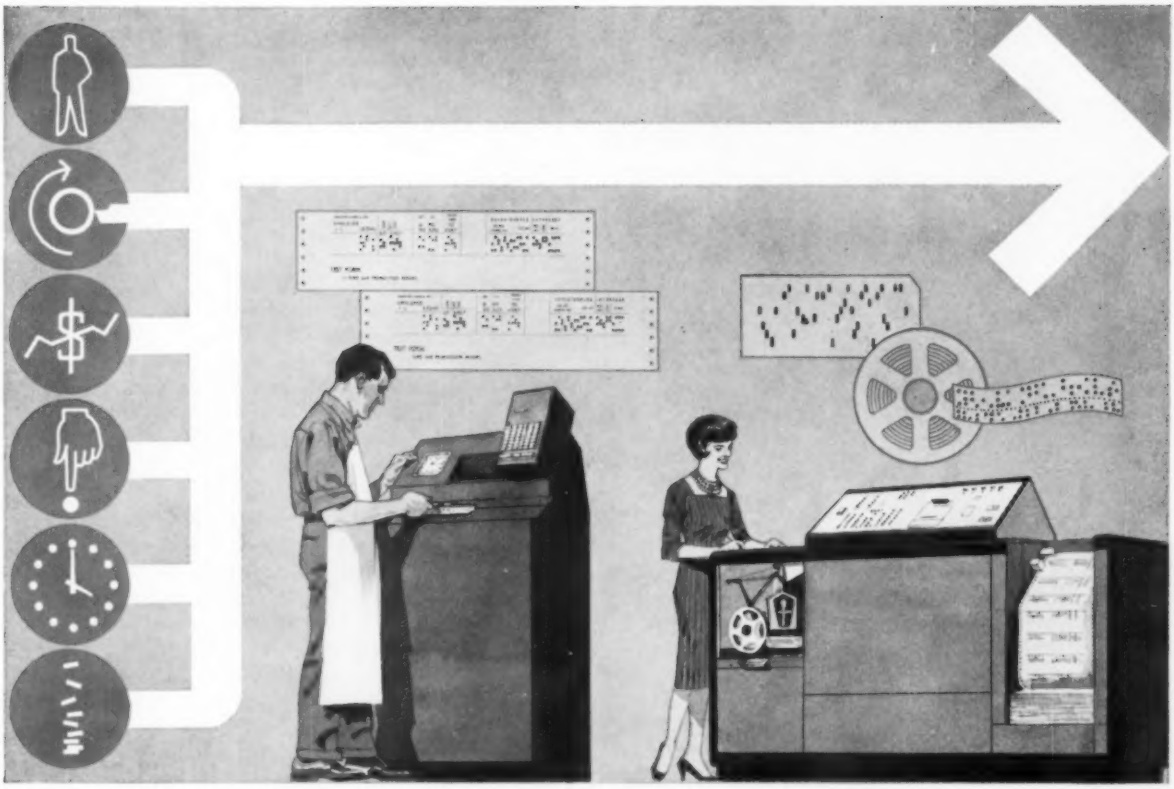
Semimetal regulators can operate at supercold temperatures (-450°F). Atoms, which normally vibrate vigorously, are still at such temperatures and electrical charges pass through easily.

Cowculator Debuts

An electronic computer, dubbed the Cowculator, will determine the most profitable level of concentrate feeding for dairy cows, according to the inventor, Dr. C. D. Caskey, director of feed research for Southern States Cooperative. The machine, which resembles a tube testing device, places special calculating emphasis on the important economic factors in dairy feeding. All input is through switch and dial settings. First public showing took place at a meeting of the American Dairy Science Assn. in Madison, Wis., June 12.

Self-Regulated Traffic

Canadian traffic soon may be controlled by computers. If the Metro Council approves the plan, electronic monitors along Toronto roadways will count the passing cars and relay the information over telephone lines to a central computer. Linked to all city traffic lights and acting on stored instructions, the computer will regulate the lights according to the weight of traffic.



STANDARD REGISTER
STANOMATIC SYSTEM

Now... completely automatic source data handling... factory floor to final reports

The big news in automatic data acquisition ahead of data processing is Standard Register's revolutionary Stanomatic System.

Now, instead of the usual manual methods of recording information pertaining to labor distribution and production control, it is possible to gather and record it mechanically for conversion to punched tape, magnetic tape or punched cards for subsequent machine accounting.

Starting point is the original event (circles in above chart) concerning — man, operation, order, variable data, time and production.

The information required about each event is recorded on the Stanrecorder by means of embossed plates, punched cards, time clock and keyboard. The Stanrecorder automatically prints in both man-readable and machine-readable language on a 2-part continuous form.

A copy of this coded form is next fed into the Stanomatic Reader-Translator which prepares the data for machine processing. (In companies with relatively small production volume, this job can be accomplished by manual key-punching of tabulating cards using the form prepared in the Stanrecorder as the source document.)

Source data pertaining to labor distribution and production control are automatically accumulated for fast, accurate, complete processing. But going farther, the Stanomatic System provides bonus advantages. The worker can have his own copy of each transaction he records. A complete, permanent chronological audit trail is provided by which every transaction can be quickly reconstructed. And management receives faster, more accurate, more comprehensive reports.

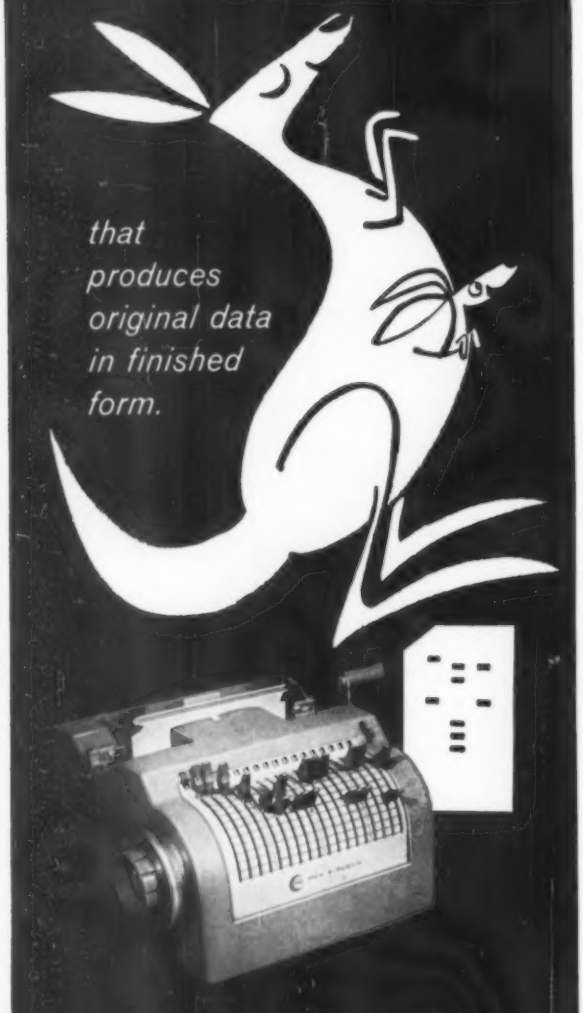
Test the Stanomatic System at low cost on your own factory floor. Write, wire or telephone for details of Standard's Feasibility Package.

Business Forms and Forms Handling Equipment for Paperwork Simplification

THE STANDARD REGISTER COMPANY, DAYTON 1, OHIO

For More Information Circle Reader Service Card No. 165

pdp MEK-A-PUNCH®
the Portable
TAB CARD PUNCH



- For punching standard codes in either 80-column or 90-column tabulating cards.
- Complete visual verification before punching—up to three cards at a time.
- No electric current required.
- As compact as a desk-top check writer.
- No trained operator needed.
- The pdp Mek-A-Punch eliminates dependence upon written or oral reports from remote locations.
- Extremely valuable in data processing department for adding new information to previously coded cards or for replacing damaged cards.

American DATA MACHINES INC.
Data Systems Equipment
7 Commercial Street • Hicksville, L. I., N. Y.

MANUFACTURERS OF:
Attendance Recorders
Data Collection Systems
Digital Clocks
Digitized Plastic Plate Readers
Keybank Assemblies
Mek-A-Punch
Military Systems
Sequential Punched Card Readers and Scanners

For More Information Circle Reader Service Card No. 166

Publisher's Desk

THE STORY of the Bank of America's now-famous ERMA system has been divulged in bits and pieces over the past few years, but little has been written of its actual accomplishments until now.

No one is better qualified to tell the ERMA story than Bob Forest, manager of our Western News Bureau. Bob was one of the early technical writers in the computer and business automation field and has studied the operations of virtually every type of computer, large and small.

Bob has been gathering material for this review of ERMA since last winter . . . typical of the painstaking, detailed approach that is his trade-mark. Whether you are a banker or not, this article has real meaning for you.

An interesting hospital application beginning on page 38 also has broad interest for every type of business or institution. Featuring a unique punched card system, this article illustrates the editorial balance that we strive to maintain in each issue. It is a perfect illustration, too, that automation and data processing tasks have much in common, regardless of whether they are applied to systems problems of manufacturers, banks, hospitals, department stores or government agencies.

Also in this issue, Don Young, our capable managing editor, provides an insight into the "Home of the Army Dollar." It's a revealing story, because it gives credit to a group of Army finance experts doing their best to save the taxpayers' money and keep Army red tape to a minimum. Few firms have the system problems of the Army, but all can profit from some knowledge of their massive move to automation.

One wonders if some of the other departments of the federal government are as aware of the achievements of automation as the armed services. If they were, we might hear less nonsense about possible adverse effects of automation on our economy.

Charles W. Gilbert

BUSINESS AUTOMATION

Publisher,
Charles W. Gilbert

Manager, Marketing Services,
Stanley Roy

Production Manager,
Mary Haley

Treasurer,
Richard M. Daugherty

ADVERTISING REPRESENTATIVES:
New York City—Robert Slocum, District Manager, Roger Biederman, Wallace W. Fisher, 100 E. 42nd St., New York 17, N. Y. Phone MUrray Hill 2-2373

Chicago—Herbert L. Sime, vice-president, Jack McDonald, 600 W. Jackson Blvd., Chicago 6, Ill. Phone DEarborn 2-3206

Los Angeles—Dillenbeck-Galavan, Inc., 266 S. Alexandria Ave., Los Angeles 4, Calif. Phone DUnkirk 5-3991.

LOW COST REEL STORAGE

Typical TAB Quality

Typical TAB Flexibility

Bottomless shelves,
nickel plated rack,
dust falls clear through.

Reels roll out at a finger touch—only 5/16" lift—as shown in photo.

SPACEFINDER REEL STORAGE provides the best dust-free reel storage at lowest cost per reel, stored in a high quality finished product. Note these exclusive advantages, then call your Tab representative and get all the details: Maximum capacity in minimum space; easiest reel put and take; lowest conversion cost to new reel container size; available in single-faced or in even lower cost double-faced sections. **Write for product literature or contact your local Tab representative today.**

HOME OFFICE: 995 Market St., San Francisco 3, California

TAB
PRODUCTS CO.

For More Information Circle Reader Service Card No. 167

One South Van Ness: Home of ERMA in San Francisco.

ERMA Comes of Age

By Robert Forest

A $35 MILLION investment in progress, the Electronic Recording Method of Accounting—better known as ERMA—has come of age.

Historically, this "event" at the Bank of America (for which and by which ERMA was developed) is an important advancement in bank automation as well, because it first was proposed in 1949—two years before the first commercial data processing system was installed at the Census Bureau, a year in which prophets of the business automation wonders to come were without honor in a land yet to realize its capacity for technical greatness—one in which the data processing future was dim, if not downright murky.

Although the future of data processing was cloudy, The Bank of America felt that eventually there would not be enough available personnel to handle the snowballing volume of checking activity. Triggered by the energy and enthusiasm of S. Clark Beise, senior vice president (named president in 1954), the bank turned to leading business machine manufacturers

for help in developing equipment in 1949. Failing to interest them in the problem, Beise asked Stanford Research Institute to develop prototype hardware for an electronic check accounting system the following year (1950).

"What we were interested in," says Al Zipf, vice president who has directed the bank's ERMA program since 1953, "was to capture information at the source and to deal with it as few times as possible. We wanted to have the account number printed on the check, and as a by-product of a single initial handling, to be able to post-print the amount.

"We also were aware of the need to conform to other banking operations and to the customers' previous banking habits. For that reason, punched card checks were ruled out; the system had to be able to handle conventional checks of random size and thickness."

Capturing information at its source required, of course, some method of reading information from the checks. Thus, the bank and Stanford Research investigated a wide range of possible solutions and looked at every binary code system and optical character recognition device then available or being talked about. All were deficient in some respect.

It wasn't until the common language recommendations of the American Banking Assn. manifested themselves in magnetic ink character recognition (MICR) that a practical, economical way of entering checks to the system became possible. And, as the only bank actively engaged in seeking a solution to this problem at the time, The Bank of America played a leading role in helping to formulate the MICR program. Much of the burden of proving the recommendations of the ABA's Technical Committee on Mechanization of Check Handling fell on their shoulders.

Why not optical scanning?

Looking back, Zipf recalls that mechanical problems always loomed larger than electronic ones. In his mind: "Our greatest contribution to electronics and to banking was in techniques for reading and paper handling."

Why was MICR chosen over optical character recognition? According to Zipf, the problems of light source and of differentiating between black and white on checks subject to mutilation or obliteration by endorsement, stamps or smudges ruled out optical character recognition at that time. Expense was another factor.

"Some day well in the future," says Zipf, "optical character recognition may be able to do the job —perhaps better, faster and cheaper. But when that time comes, the job will be simplified by the highly stylized MICR E-13B type font."

While the battle for the capture of information at the source was being fought, Stanford Research and the bank also were moving ahead on other fronts—defining the system, firming up requirements and developing hardware. It wasn't always a neat, straight line of progress.

"The project took many different turns," Zipf recalls. "At one time, it was felt that we needed a random access memory and on-line manual interrogation." The features, along with a wired-in program were built into the special-purpose prototype painstakingly hand-made at Stanford Research and unveiled in 1955.

Described glowingly in the press, ERMA's debut was somewhat less impressive to others of the banking fraternity who were inclined to judge the system as a final product, not a prototype, and who came, saw and remained unconquered. A typical reaction to the prototype system, which was understandably large: "We can't afford it."

A course of optimism

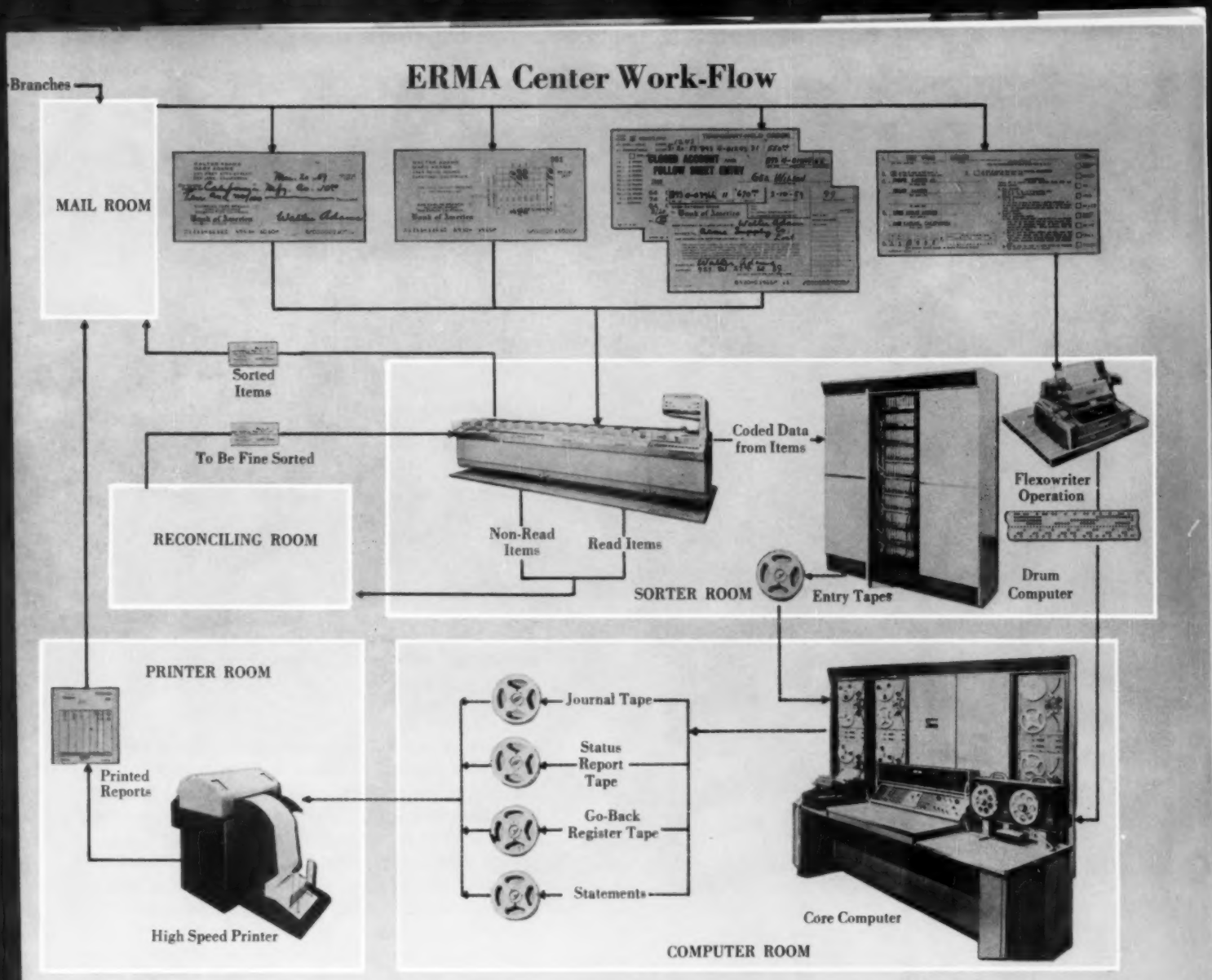
The Bank of America felt that it couldn't afford not to have it, so it charted a course somewhere between the optimism of the press and the pessimism of the experts. The prototype told them that electronic commercial check accounting was practical and economical; they still had to choose a manufacturer to produce ERMA, establish final system requirements and move ahead as rapidly as possible to installation and full-scale operation.

Chosen to acquire the bank's rights to ERMA, to do the development work and to produce the finished system, The General Electric Computer Division began working with The Bank of America to nail down ERMA's specifications. Some of the early thinking was rejected—for instance, the random memory and manual input were thrown out.

"We decided to abandon random access storage of balances," says Zipf. "For one thing, it was too expensive, and if we processed our work at night, balances for activities through the previous day would be available at every branch every morning, anyway." The development of the MICR language meant that manual input could be dropped.

Other far-reaching decisions: the system would be general-purpose—the wired program to be replaced by a stored program—and (a couple of years before the first commercial transistorized system was announced) the system would be solid-state.

"We had evaluated the current status of transistors several times during the program and found them wanting," says Zipf. "But by the time the prototype was ready, so were transistors."



Thus, in 1956, The Bank of America and GE signed a historic contract for 30 ERMA systems, the first to be delivered within 30 months. Delivery dates for each of the following installations were set—and met.

"There wasn't a man on GE's staff or ours (and later GE's sub-contractors', NCR and Pitney-Bowes) who didn't realize the magnitude of the project to be accomplished in 30 months," Zipf said. "That we met every date is a tribute not only to the organizations involved but, more particularly, to the dedication, determination and stamina of the men who represented them.

"As you might expect, there were problems, set-backs and heated disagreements about design philosophy, but on every occasion we bought the time back with individual effort."

While the systems were being developed, The Bank of America moved on to other aspects of the ERMA program—building a data processing staff, choosing the sites and design of ERMA centers, training, and designing checks.

Some insight into the thorough planning behind ERMA may be gathered by the manner in which processing center sites were selected. Deciding factors included: (1) frequency and duration of power failures in the area, (2) locations between the farthest branch and a key center—San Francisco, Los Angeles, etc., (3) locations relatively safe from primary wartime target areas, (4) sites reasonably close to existing or proposed freeways, and (5) cost—for a functional operation, there was no need to pay for prime land.

To design the buildings, planners had to study the potential of all areas, projecting how many accounts there might be in each area by 1968. This was done in 1957, with allowances for additional growth and for the possible addition of equipment.

Careful ERMA planners even ruled out the possibility of fire or other major disasters wiping out

ERMA's sorter-reader processes documents involved in a commercial checking account by picking up information previously encoded in magnetic ink.

Using keyboard, operator uses NCR proof machine and encoder to imprint amount of check on lower right-hand edge.

their files by maintaining them at three different locations. A printed version of every day's activity—prepared by ERMA—is kept at the branch; the previous day's activities are kept on a magnetic tape file, stored at the ERMA center; and the activities for the past three days are stored at special remote locations.

Such planning is a reflection of the basic philosophy of Beise, Zipf and The Bank of America. Typical of their concern for the future is Beise's recent request for an estimate of the bank's building requirements for the year 2000.

That such a futuristic philosophy pays off is evidenced by ERMA; the design of functionally interchangeable centers allowed the bank to complete its conversion schedule 13 months ahead of time. The original estimate for the conversion of 450 branches was exceeded by 220; all but 49 branches, accounting for some 2.3 million accounts, currently are being served by ERMA.

Zipf admits that other targets were not met on the nose: "We missed our projection of earnings by 30 percent," he says, and adds with a grin, "but on the right side."

Originally designed as a special-purpose commercial check accounting system, ERMA has taken shape as a general-purpose system which will take on additional applications now that it has achieved its primary goals. ERMA now is processing 95 percent of the bank's commercial checking accounts.

The bank announced in August that its San Francisco ERMA center had taken on the job of processing 18 million Traveller's Checques a year. Next is savings deposit accounting.

Not all of the advantages of ERMA are expressed in simple terms of dollar savings. In addition to a substantial increase in revenue, the system has improved customer service. Complaints have dropped sharply, according to bank officials.

Statistical reports built into ERMA programs enable management at several levels to have invaluable information at their fingertips. This area of management assistance Zipf terms as the most challenging part of data processing—"one into which we're just beginning to move."

And, as the financial institution to establish bank automation as a practical reality, The Bank of America has a running start on its competitors.

Ten tape transports serve one of two IBM 7070-1401 systems that are now used to supplement ERMA's tremendous powers—proof of The Bank of America's continuing efforts to improve operations through automation.

"We have at least a two-year lead over anyone else," says Zipf, "and we'll be making money on our system during this time."

Perhaps the biggest advantage from ERMA did not accrue to The Bank of America, but to the banking community at large. Bank automation historians probably will agree with Zipf, who says: "There's no question in my mind but that our entry into the field provided the impetus for cutting three to five years off the timetable otherwise established for commercial deposit accounting."

As important as ERMA is—both historically and to The Bank of America—it's only part of the data processing story at the world's largest bank. The same data processing organization which pushed ERMA to completion was responsible for putting the bank's first computer to work—an IBM 702, installed in 1955. The bank's large volume of business enabled it to justify the system for real estate and installment loan accounting, and the first system was joined by another 702, installed in Los Angeles in 1957.

The 702's gave way in 1961 to two 7070's, located at the bank's data processing centers in Los Angeles and San Francisco. Between them, they handle over 1.5 million real estate and installment loan accounts. Other applications include accounting for branch clearings, bond investment, branch activity, systematic investments cost allocation.

Serving as satellite computers for the two 7070's are two 1401's, used primarily to convert punched card data to magnetic tape input for the 7070's and to serve as off-line output subsystems for the larger computers.

The one link between ERMA and the other data processing centers exists in the form of a recently-developed translator, which allows communication between the two types of systems. The translator unit is a "black box" magnetic tape adapter. Connected on-line to a 1401, it automatically reads or writes ERMA mode information and will allow consolidation data from ERMA and 7070 files.

At the operational level, ERMA and the 7070-1401 installations are almost completely independent, although the center managers of both activities report to the vice president-Centralized Operations. On the planning level, both ERMA and her data processing brothers are controlled through the Computer Systems Research group, which develops new applications and establishes the program standards and controls so necessary to such a large and operationally decentralized function. This group reports, with several others, to the vice president-Systems and Equipment Research.

Of the two programs, ERMA continues to capture the popular imagination more strongly. This is partly because ERMA affects the pocketbooks of the bank's customers more directly. As far as the bank's employes are concerned, it is ERMA who has fulfilled her promise of taking the pick and shovel work out of branch operations.

From the viewpoint of the banking and data processing fraternities, ERMA stands, too, as a vivid symbol of the direct and vital role to be played by the user in determining the scope and the direction of data processing. In a sense, as ERMA has come of age, so has bank automation. ■

Moving slowly and surely, the U. S. Army is automating its finance operations and reducing Government waste.

Home of the Army Dollar

By Donald Young

THE STORY of the U. S. Army Finance Center —"Home of the Army Dollar"—deals with magnetic tape, not red tape. It shows the extent to which electronic computers and modern data processing techniques are being used to reduce Government paperwork, get the job done better and faster . . . and save the taxpayers' money.

That these goals are being accomplished successfully is evidenced by these facts:

1. Within the past five years, the Finance Center has effectively consolidated eight different Army finance operations, each previously handled as a separate function.

2. The cost of performing these duties has been going down, although the workload is continually going up. In the past few years, automated techniques have decreased the center's operating costs substantially.

Up to 1946, most Army Finance operations were decentralized with most financial functions being handled individually.

In 1953, the Finance Center began a study to determine the feasibility of consolidating its allotment operations, which were—up to that time—still being maintained by separate divisions.

Rex Sears, civilian head of the Finance Center's EDP division, must supervise the conversion to a large-scale H-800 computer.

Save $1 million

The investigation showed that each of these divisions performed four common basic functions: (1) examination, (2) accounts control, (3) inquiries and records and (4) reconciliation.

These units were reorganized on a functional basis, creating a Receiving and Examination Division, an Accounts Control Division, a Disbursing Division, a Reconciliation Division and an Inquiries and Records Division. In time, the Finance Center merged the Receiving and Examination Division into the Accounts Control Division; the Disbursing Division was changed to Mechanical Operations; and reconciliation, an audit-type function independent of the allotment payment function, was transferred to Military Pay Operations.

Prior to this consolidation, documents were received in each division according to the class of allotment. They were manually sorted and referred to accounts control clerks, who checked them against accounts control records and accepted or rejected them. Accepted documents were re-

◄ Finance Center, U. S. Army, Indianapolis.

ferred to key punches, where the check-writing media—a master card and a stencil—were created.

Since the consolidation, documents go directly to key punch, where the check-writing media are produced. The cards are sorted mechanically and sent—instead of the original documents—to the accounts control clerks for acceptance or rejection.

Before the consolidation, the Army used separate letters of transmittal for each class of allotment to reflect "final discontinuances" and "all other" changes. Now, only two series of transmittals are required from the field.

The investigating team that reorganized and consolidated these allotment procedures estimated that the new system would save the Government $700,000 a year. Actual savings have been closer to $1 million a year.

Partially overlapping this consolidation program, another long-range study was initiated by Maj. Gen. E. J. Bean, then the commanding officer. This study was to determine the feasibility of using a large-scale computer for these and other Finance Center operations.

Completed in January 1956, the study showed a great potential for computer processing, but it also showed that many of the current users, in Government and in industry, were not getting expected results. In a number of cases, the study showed, the users had moved too fast, attempting to do too much in too short a time, and with costly consequences.

The Army decided to follow a conservative course. The installation of a large-scale computer was shelved and a study into the possibilities of medium-sized computers was initiated. In January 1958, an IBM 650 was installed at the Finance Center.

GI savings accounts

Soldiers' Deposits accounting was the first function to be put on the computer. Under the Soldiers' Deposit program (which dates all the way back to 1872), an enlisted serviceman may elect to set aside a part of his monthly salary in savings, with deposits made in amounts of five dollars or more and interest paid at the rate of four percent per annum. Over 229,000 of these "GI savings accounts" now are being maintained by the Finance Center, with nearly a million transactions (deposits and withdrawals) recorded annually. Some $35.8 million in funds are on deposit.

The selection of Soldiers' Deposits as the first operation to be converted to the 650 computer was, once again, a result of militant conservatism. Soldiers' Deposits, unlike dependents' allotments or retired pay, are far less critical and provide more latitude for trial-and-error. Too many people are reliant upon the timing and accuracy of dependents' allotments to permit any experimentation. This function could be assigned to the computer at a later date, when the Finance Center enjoyed greater experience in electronic data processing.

This did not mean that the Finance Center lacked confidence in EDP or the equipment and procedures employed. Within a few months, military pay, budget data reporting and allotment reconciliation were added to the computer, and in due course, the job of compiling the employer's quarterly Social Security report also was put on the machine. Since that time, reels of magnetic tape containing information on all of the Army's 870,000 personnel have been forwarded to the Social Security Administration in Baltimore every three months, eliminating previous bulky shipments of punched cards and tabulated lists.

Liberal job adjustments

In evaluating the Finance Center's 650 installation, the Department of Defense concluded that the Army was saving $117,000 per year by using the computer instead of previous methods, but soon these and many other projected applications being tested or appraised began to tax the capacity of the 650. The machine was operating on a consistent two-shift basis and often was extended to a third shift.

The Finance Center re-opened its study of large-scale computers, working with the major equipment manufacturers in 1959 to determine the value of such an installation and the type of hardware required. In September of that year, the study team estimated that the center could save about $340,000 a year with a large-scale computer, once the new equipment became fully operative. Final approval to order a Minneapolis-Honeywell 800 system was received in December.

The Honeywell installation was completed this past April (1961). The configuration includes a central processer, six magnetic tape units, two bill-feed printers, one high-speed printer, one high-speed card reader and one high-speed card punch.

Programs from the 650 were converted as quickly as possible and other jobs were scheduled for addition as soon as they could be worked in. On June 28, Soldiers' Deposits were put on the computer; on July 11, the maintenance of military pay vouchers and Social Security records were added.

Personnel needed training to meet changing job requirements. The Finance Center employs about 3,450 Civil Service personnel and 50 military staff. Its combined payroll of $18.5 million per year accounts for some 85 percent of the center's total operating cost.

With the onset of automation, there was a need

Savings bonds, issued at a rate of 225,000 per month, are printed on this 407 tab. Officer in charge is the only agent excused from personally signing each certificate.

for new organization structures, new manning levels and new job descriptions. Adjustments in the work force—advancements and transfers in grade—had to be made.

"We had been counseling with these people for a long time," says Brig. Gen. F. J. Kendall, who just retired after three years as commander of the Finance Center. "To their credit, they certainly 'played ball' with us—working hard all through the long period of preparation.

"With the backing of the Chief of Finance and the cooperation of the Civil Service Commission, we adopted a liberal attitude toward continuing employment without grade adjustment until retraining was fully accomplished and reassignments in grade could be made."

A prison offense

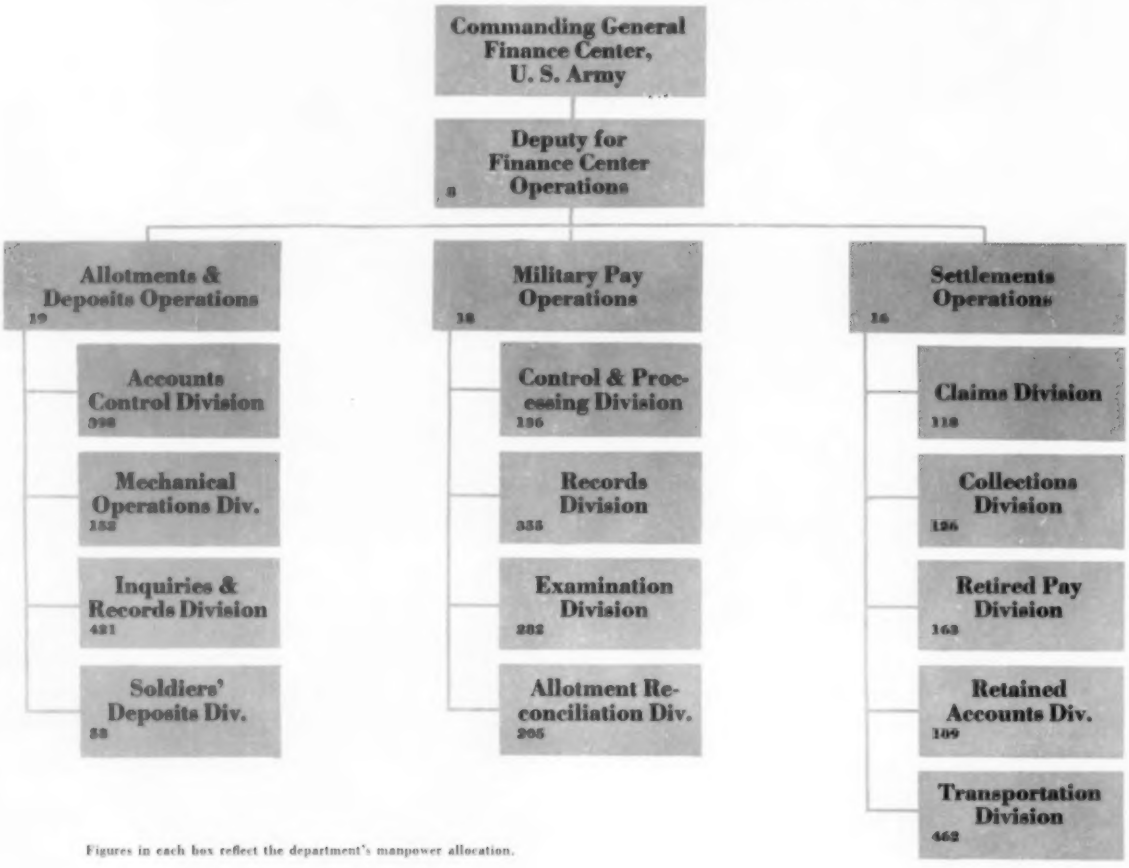
Reductions in manpower were made through normal attrition and turnover in the work force.

As commander of the Finance Center, Gen. Kendall had the responsibility of seeing to the disbursement of $2.2 billion a year in Government funds. Responsibility for making sure that the center operated according to its budget was delegated to Col. Robert G. Davis, comptroller.

It is a prison offense for an Army comptroller to go over his budget, yet Congress does not allow

Military Pay Vouchers, a system initiated in January 1959, are sorted on this vacuum-fed Keytronic sorter at a rate of 3,000 per hour. Army is still the only branch of the armed forces using the new pay voucher system.

Departmental Structure of the U. S. Army Finance Center



Figures in each box reflect the department's manpower allocation.

for any excess "slush fund" to provide a margin of error in determining the operating expenses of a military installation. Alertness to the financial needs of the coming year and then careful administration of authorized allowances are vital, and the efficiency of the Finance Center's operation can be gauged by how closely these two duties coincide. Last year, the Finance Center came within 99.98 percent of its forecasted budget.

The Army does not attempt to pay troops directly from the Finance Center. Soldiers receive their net pay each month from local finance offices.

The Finance Center does serve as a clearing house for all military pay transactions, however, and acts as the home office for more than 400 of these field finance offices all over the world. The soldier gets his pay in the field, but the field finance office sends a voucher for the transaction to the Finance Center, which must process a million such pay vouchers every month, plus handle the settlement of any claims.

The center maintains a month-by-month financial history of every soldier's pay during his entire period of service; renders the quarterly employer's report to the Social Security Administration; and reports to the Internal Revenue Service on federal income tax withholdings. These functions must be performed for each of the Army's 870,000 GI's.

Transportation charges for the Army, the Air Force and the Office of the Secretary of Defense are received, processed and paid by the Finance Center. All freight and passenger service invoices from railroads, airlines, truckers and other transportation companies are processed through the center's Transportation Division. The largest division at the center, Transportation disburses $2.5 to $3 million every business day to settle these obligations.

Monthly payments to all retired Army personnel —about 115,000 of them at the present time—also come from the Finance Center.

Probably the most important responsibility of

all, however, is the maintenance of the Army allotment program. Military personnel, who are subject to frequent changes of station and often on short notice, do not have the time nor the facilities to handle their own financial affairs, particularly in many foreign countries or under combat conditions. To meet this situation, Congress has authorized the allotment system, by which soldiers' families, banks, insurance companies and other selected agencies receive regular payment, deducted automatically from the soldier's monthly salary. The knowledge that these matters are being taken care of in his absence becomes a significant morale booster for the soldier and gives him greater peace of mind.

Searching for a home

Over $80 million worth of allotment checks are issued by the Finance Center every month. Last year, there were 2.4 million allotment actions to process, resulting in the issuance of 7 million checks and more than 2.7 million savings bonds.

All of these functions previously were handled by different organizations, in different places and in different ways. Beginning in 1942, for example, dependents' allotments were handled out of the Office of Dependency Benefits, Newark, N. J. Then in 1946, this and several other Army finance functions were united in the Central Field Fiscal Office at St. Louis. On March 1, 1952, this organization became known as the Finance Center, U. S. Army —its present official title.

Meanwhile, the war in Korea made it necessary for the finance operation to vacate the old munitions factory it was occupying in St. Louis and move to other quarters. Canvassing possible alternative sites, the Army decided to construct its new finance headquarters on the grounds of Ft. Benjamin Harrison, outside Indianapolis, Ind. Construction of the new headquarters building began in August 1951.

Like moving a factory

A 996 x 612-ft., three-story, $19 million building, the new Home of the Army Dollar covers 14 acres and contains 1.5 million sq. ft. of floor space. It is the largest of all Army buildings, second in size only to the Pentagon in Washington, D. C. Dedication ceremonies were held in October 1953.

Various finance functions were transferred from St. Louis to Indianapolis over a two and one-half year period coinciding with the construction of the Finance Center and its ability to accept the workload. Over all, the move required more than 500 loaded trailer-trucks full of supplies and equipment, an aggregate weight of more than 10 million pounds, and it was described by one news bureau as "equivalent to picking up and moving an entire automobile assembly plant across three states without once stopping the assembly line or interrupting the flow of new cars off the end."

The Home of the Army Dollar is a pretty tidy place, but it is always involved in a "remodeling" program. New applications for the H-800 system and better methods of doing the present job are always under study.

At Ft. Belvoir, Va., and at the Finance and Accounting Office in Washington, D. C., military pay voucher data has been produced on punched cards as a by-product of local paymaster operations. The punched cards, in turn, have been transmitted to the Finance Center for subsequent processing. This procedure will be expanded at installations where local finance operations are large enough to warrant the use of electronic accounting machines.

At smaller stations, such as the Aberdeen Proving Ground, punched paper tapes have been produced as by-products of typing local military pay vouchers. Either of the two local-level operations will help to reduce the Finance Center's key punch workload.

Optical scanning also may prove to be a means of reducing the key punch workload, a costly part of the present operation. Several manufacturers have shown interest in preparing proposals for equipment that will scan documents at the center and automatically convert the data to H-800 magnetic tape.

Other methods of data transmission, including the transmission of magnetic tapes, are under constant study.

On the output side of the picture, the Finance Center is studying the possibilty of using newly-developed equipment to convert data from magnetic tape to microfilm at very high speeds. ■

next month . . .

Order It Today . . .
Get It Tomorrow

Ryerson Steel has automated every step of its order-handling system to see that virtually all of its customers get 24-hour delivery.

also . . .

an analysis of the potential business role of the photo-image storage retrieval system recently developed for the Central Intelligence Agency.

Edwin Helton, production control manager, checks an order and reviews his inventory of copper wire products for shipment.

While one punched tape is being prepared as a by-product of order-writing, motorized tape punch (left) also permits preparation of another.

Automated System

SHIPMENTS have been speeded, errors eliminated and clerical costs reduced by an integrated order handling-invoicing system at the Inca Manufacturing Division of the Phelps Dodge Copper Products Corp., Fort Wayne, Ind. The new sales order entry procedure makes possible same-day shipment of stock items, an important competitive factor to the company.

Heart of the application is the Communications Department, where sales orders are prepared 90 percent automatically on three typing units. Punched tape and edge-punched cards are used as input and are programmed to produce two eight-channel tapes as by-products.

The output tape is converted to punched cards, used for invoicing and other posting in the Tabulating Department. The other tape sends data through a tape transmitter-receiver to Inca's Production or Shipping Department more than half a mile away. There, it is run through another automatic typing unit to prepare either a shipping set or production order.

One automatic typing, therefore, captures on by-product tapes all the information needed for later documents. This factor alone has made it possible for the firm to reassign several clerks

Punched tape is fed into the Teledata and referred to either the shipping or the production departments. Incoming orders are received simultaneously.

According to the department involved, the Flexowriter prepares either a shipping set or a production order from tape received over the Teledata.

Makes One-Day Shipment Possible

within the division, putting them on more productive and challenging jobs.

Phelps Dodge Copper Production Corp. operates 10 plants, producing a wide range of copper wire, cable, pipe, tube and other specialized copper and copper-alloy products. Some 6,000 magnet wire products—the most diversified line of magnet wire in the world—are fabricated at the Inca Manufacturing Division at Fort Wayne.

The problem of accounting for all of these products is a formidable one. Orders are received by Teleprinter, telephone and letters from salesmen, district offices or some 5,000 customers. Although more than 80 percent of these orders are for single items, some list six or more items.

Inca averages 200 orders a day, with a total of 350 items. During peak periods, as many as 600 such orders will be received per day and each item then becomes a separate sales order.

Orders received by the Sales Department first are checked for verification and interpretation of wire specification data. Next, a preliminary sales value is determined and the order is checked for credit status.

The original order is forwarded to a control clerk at an IBM RAMAC 305 remote inquiry station. From it, the clerk notifies the computer of the item or items ordered and, in effect, inquires into their availability status.

The computer simultaneously updates its on-order records and stock report balances and, at the inquiry station, punches an eight-channel punched tape for each item ordered. This tape contains all pertinent data relative to the item and its availability (wire size, production specifications, amount available and amount required).

These tapes are placed with the orders, then divided alphabetically and into stock orders (on-hand items which can and will be shipped the same day) and production orders. They are forwarded to the Communications Department, center of Inca's integrated data processing system.

In this department, there are Friden Programatic FPC-8 Flexowriters and a Friden Teledata tape transmitter-receiver unit. The Flexowriters, which normally produce one eight-channel punched tape as a by-product of writing the original document, also have Friden motorized tape punches attached. These automatically prepare a second eight-channel punched tape, described earlier.

Reading from either punched tape or edge-punched cards, each Flexowriter punches data into

one or both of its output paper tapes and simultaneously types out five-part sales orders at the rate of 115 words per minute. The input keyboard is used only for entering new or variable data.

The Flexowriter operator inserts the RAMAC-produced punched tape into the reader. The machine then types the first line of the continuous sales order form automatically.

While that line is being typed, the operator pulls from a tub tray in her desk drawer an edge-punched master card which contains all of the customer's constant information, such as his number, agent's number, sold to and ship to.

90 percent automatic

The operator inserts the edge-punched card into the Flexowriter reader. This card causes the constant customer information to be typed onto the sales order and also programs the Flexowriter so that it will automatically stop for manual entry of the variable data, such as customer's purchase order number, date, quantity and description.

With 90 percent of the sales orders automatically typed, one typist can turn out as many as 150 sales orders a day. A program tape on the Flexowriter automatically selects which data is to be punched into either or both of the by-product tapes.

The auxiliary tape contains only the variable information which the RAMAC does not have stored. It is removed from the Flexowriter twice a day and forwarded to the Tabulating Department. There it is converted into punched cards and used for invoicing, order analysis and sales analysis.

The first tape from the machine's standard tape punching unit contains the entire record of the sales order. It is taken off the Flexowriter after every seven or eight orders and placed in the reader of the Friden Teledata tape transmitter-receiver unit.

A half-mile hike

A station selector switch is thrown to send the data either to the Shipping Department or the Production Department. The data in the punched tape is transmitted through the reader and simultaneously reperforated and checked on the punch of the Teledata.

The eight-channel punched tape received either at Shipping or Production is fed into a Flexowriter, which automatically prepares either a five-part shipping set and related papers (at Shipping) or an 11-part combined production order-shipping set (at Production).

These continuous forms are identical to the sales order and their preparation is entirely automatic. The only manual step is the removal of the completed documents from the Flexowriter.

In the case of partial shipments, further use is made of the tape produced by the Production Department's Teledata receiver. The original paper tape is retained to create documents for the balance of goods to be produced and subsequently shipped.

One basic writing by one operator has recorded all data necessary for all paperwork for an order: sales order, production order, shipping set and invoice.

Under the previous system, sales orders contained all items on one order and were prepared manually, including two duplicator masters, one for invoicing and one for either production or shipping.

Availability status was not determined until the sales order had been carried manually to the Scheduling Section, a half mile away, which checked a stock report. If the items were in stock, the duplicator master was sent to Shipping, where a five-part shipping set had to be run off individually on a duplicating machine. If the items were not in stock, the master went to Production, where it was run through the machine 11 times for each item, producing the 11-part production order and shipping set. For a five-item order, 55 different forms had to be duplicated.

Masked production orders

When some items were in stock and some were not, it was necessary to mask out the in-stock items while the production orders were duplicated, then mask out the out-of-stock items while the shipping orders were duplicated.

Two people were kept busy full-time with the duplicating; yet shipments were being delayed as much as three days.

It can be seen that the new system has replaced numerous burdensome clerical functions that directly or indirectly added to the time and cost of releasing shipments. Personnel adjustments were made by placing two duplicating machine operators and a keypunch operator in other positions. Record keeping, filing and messenger service were substantially reduced.

As a result, in-stock items leave the same day the order is received. Meanwhile, the great reduction in manual handling has meant a corresponding decrease in errors.

In addition, the Inca division has derived considerable indirect benefits from the necessary analyses and realignment of paperwork procedures involved in planning and installing the system. ■

Wright LINE

UNISTORALL

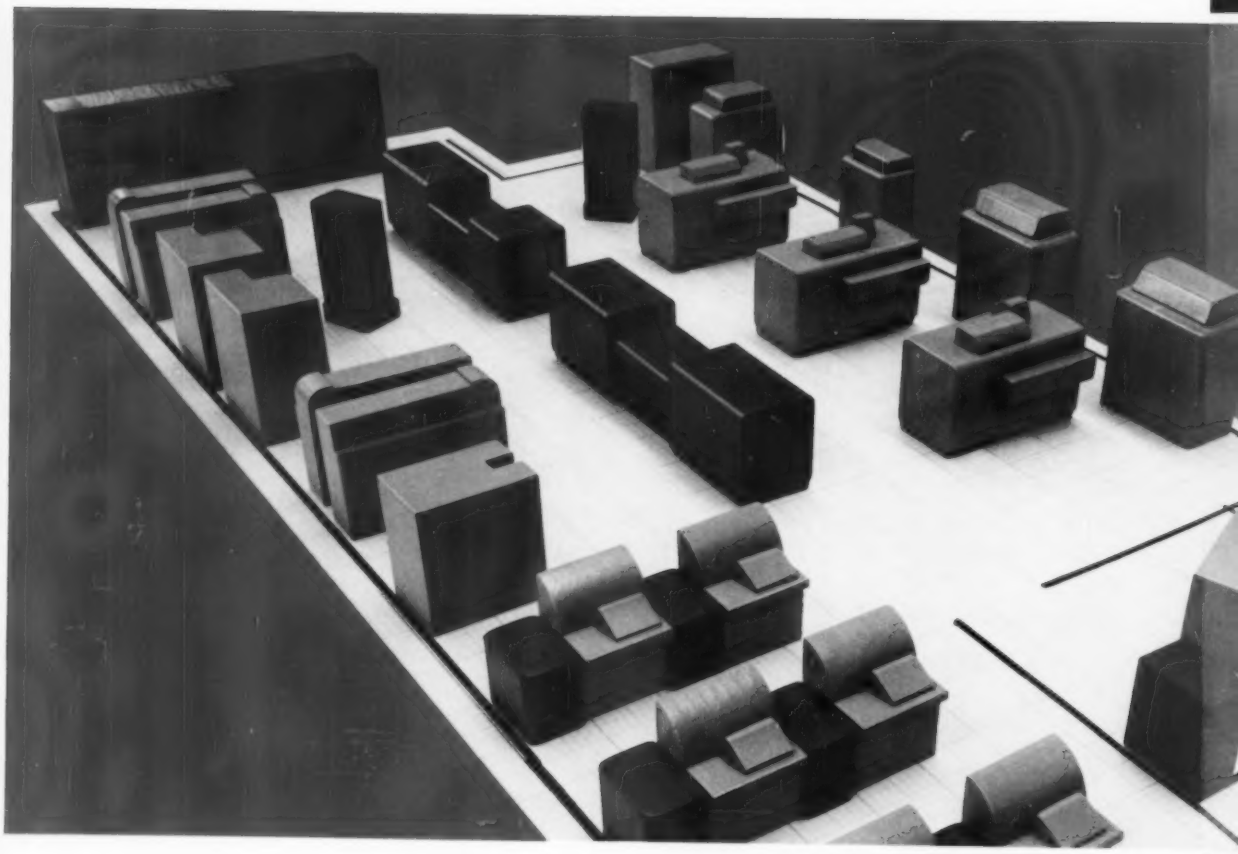
PLANNED SAVINGS OF

TIME...SPACE...

MONEY!

Wright LINE

UNISTORALL



TIME...SPACE... MONEY!

BEFORE PLANNING . . . a study of this department was made to determine the necessary walking distances and time involved to secure forms, cards and panels for setting up machines for a new job. It amounted to 1708 feet.

A floor plan was made and UNISTORALLS added to give the storage of all operating supplies at or as close as possible to machines where they were needed. The walking distances were cut to 410 feet, a 75.9% saving in time . . . production was greatly increased.

In addition UNISTORALL added valuable, necessary work surface and traffic aisles to provide a work flow not available previously.

INVESTIGATE *FREE* FLOOR PLANNING . . .

OFFERED ONLY BY WRIGHT LINE!

Overcome your space problems... with Wright Line Floor Planning and UNISTORALL

If you are considering moving, rearranging, expanding or trying to overcome space problems, it's time to think of Wright Line's FREE FLOOR PLANNING SERVICE and UNISTORALL. The future efficiency of your department means looking ahead to provide peak production efficiency and machine utilization. Work areas should be defined, traffic aisles made wide enough for transporting materials in trucks, filing concentrated, the storage of all operating supplies brought as close to machines as possible and all important work-surface areas provided at machine location.

There is only one way to bring about these benefits — FLOOR PLANNING with the help of your Wright Line representative who can show you the benefits of using UNISTORALL. This service will provide an overall, three dimensional view of your entire department, not with flat stick-down templets that can't be moved around, but with actual scale models. You can study the entire department and solve layout problems at this time rather than later on when movement of actual machines would be costly.

FLOOR PLANNING helps you to save time, space and money. It gives you the chance to see exactly what can be done and how it will look. It provides an opportunity to plan for the future of your department. Moreover, by using UNISTORALL, you're protecting your future needs for possible tape reel storage since the UNISTORALL can be easily converted with reel holding inserts. Thousands of departments have used Wright Line's floor planning methods and added the efficiencies offered only by UNISTORALL. Investigate this possibility today by calling your local Wright Line branch office or write.

Customized painting to match your department or equipment colors is available. Ask your Wright Line representative for details.

Wright LINE
DATA PROCESSING ACCESSORY EQUIPMENT

WORCESTER, MASSACHUSETTS
DIVISION OF BARRY WRIGHT CORPORATION

Products Sold Exclusively by Our Sales Organization
Throughout the United States and Canada.

Printed in U.S.A.

Automatically-prepared medical records for each patient are maintained in the nurse's metal-bound binders. Customers' charge tickets are kept in a special rack (upper left) for use as needed.

℞ for Hospital's Billing Problem

SYRACUSE Memorial Hospital, Syracuse, N. Y., has cured an unusual headache—one originating in the Accounting Department and caused by hundreds of complicated procedures involving in-patient billing.

By applying punched card techniques to this problem, the hospital has eliminated many of those complications (confusion, error and delay) by providing the patient with a detailed invoice which shows him exactly what he is being charged and why, how much the insurance company will pay, and how much he must pay.

Varying room rates, charges for special nursing, the length of the patient's confinement, the cost of special drugs and medications, fees for X-rays and other laboratory tests, and similar factors—each tailored to the particular case at hand—create innumerable accounting problems and make in-patient billing a very complex business. When manual accounting methods are used, inconsistencies among the 100 hospitalization insurance plans currently in use have made the situation virtually impossible.

Otto V. Rullis, comptroller at Syracuse Memorial, feels that the most outstanding feature of the new billing procedure is the efficient way in which it handles insurance charges. The hospital actually initiated the new system by first studying the various hospitalization plans for similarities. They found that some plans could be grouped into certain categories: limitation by the number of days the patient would be confined, by a flat room rate and extra charges, etc.

Working with such groupings, the hospital punched identifying data cards for each category and these, in effect, serve as program cards when fed into an IBM accounting machine.

When a patient arrives at the hospital and is admitted, he immediately is assigned a patient number. This becomes his control number for all subsequent accounting procedures. Different sets of numbers are used for in-patients, out-patients and clinic patients.

Basic data on the patient is entered on a Ditto master for duplication onto medical record forms, notices to various hospital departments and a deck

Constant control of all charge cards permits the Business Office to prepare bills quickly and completely, then use the source documents for additional statistical purposes.

of 25 punched card charge tickets. These tickets follow the patient through his stay.

The medical record and the charge tickets are forwarded to the nurses' station, where the medical record is put in the patient's binder and the charge tickets are placed in a special dispensing rack.

For every service that is accorded the patient, the nurse pulls a charge ticket and sends it with the patient to the appropriate service department (X-Ray, Lab, etc.) After the service has been rendered, the ticket is priced, recorded in a log and deposited in a box, which is emptied by the Business Office messenger three times a day. Charge tickets are numbered consecutively, assuring the Accounting Department that all charges have been accounted for on the final bill.

Who gets the bill?

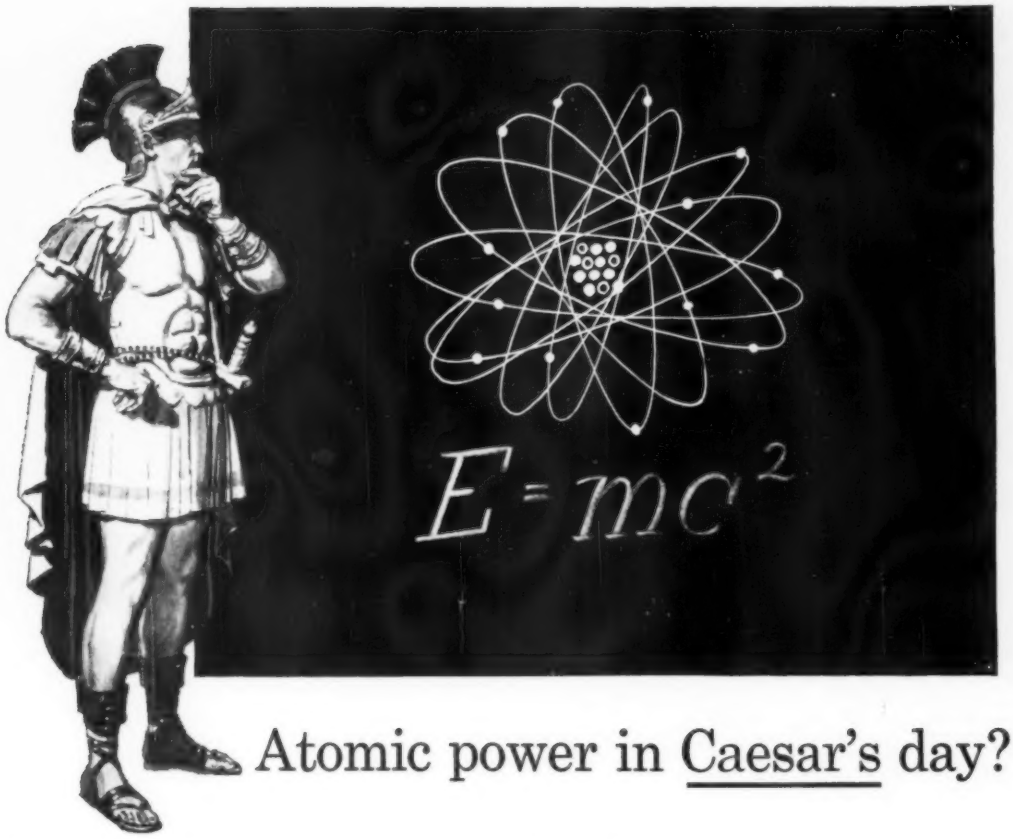
As a control measure, the Business Office totals the charge tickets from all of the different departments on an adding machine, then sends the adding machine tapes with the charge tickets to the IBM Department.

The IBM Department notes the patient's number on the charge ticket and pulls a pre-punched customer data card (containing the patient's name and address) and an insurance card from a tub file. These are placed with the charge tickets received from the Business Office and are processed through the accounting machine.

In the accounting machine, the insurance cards set up the limits of each hospitalization plan. When charge tickets are fed into the machine for the compilation of a bill, the amounts are automatically subtracted from these limits and a negative balance is established. This balance, in turn, determines which counters in the machine will accumulate the charges and eventually cause them to be listed on the bill. All charges are listed on the patient's invoice under the "Service" column; all insurance credits, under the "Insurance" column; and the balance to be paid by the patient, under the "Patient Owes" column.

Weekly, Discharge and Final bills are prepared in this manner for every patient, eliminating nearly all of the manual posting problems formerly associated with in-patient billing.

Once the billing procedure is out of the way, the cards may be used to show management such information as service department work-load, the origin of hospital revenue, Aged Trial Balance and other data, previously unattainable or very hard to develop prior to the use of the new punched card system. ■



Atomic power in Caesar's day?

Certainly!

It was there, in the ground, in the air and water. It always had been. There are no more "raw materials" today than there were when Rome ruled the world.

The only thing new is knowledge . . . knowledge of how to get at and rearrange raw materials. Every invention of modern times was "available" to Rameses, Caesar, Charlemagne.

In this sense, then, we have available *today* in existing raw materials the inventions that can make our lives longer, happier, and inconceivably easier. We need only *knowledge* to bring them into reality.

Could there possibly be a better argument for the strengthening of our *sources* of knowledge—our colleges and universities? Can we possibly deny that the welfare, progress—indeed the very *fate*—of our nation depends on the quality of knowledge generated and transmitted by these institutions of higher learning?

It is almost unbelievable that a society such as ours, which has profited so vastly from an accelerated accumu- ation of knowledge, should allow anything to threaten he wellsprings of our learning.

Yet this is the case

The crisis that confronts our colleges today threatens to weaken seriously their ability to produce the kind of graduates who can assimilate and carry forward our rich heritage of learning.

The crisis is composed of several elements: a salary scale that is driving away from teaching the kind of mind *most qualified* to teach; overcrowded classrooms; and a mounting pressure for enrollment that will *double* by 1967.

In a very real sense our personal and national progress depends on our colleges. They *must* have our aid.

Help the colleges or universities of your choice. Help them plan for stronger faculties and expansion. The returns will be greater than you think.

If you want to know what the college crisis means to you, write for a free booklet to: HIGHER EDUCATION, Box 36, Times Square Station, New York 36, New York.

HIGHER EDUCATION

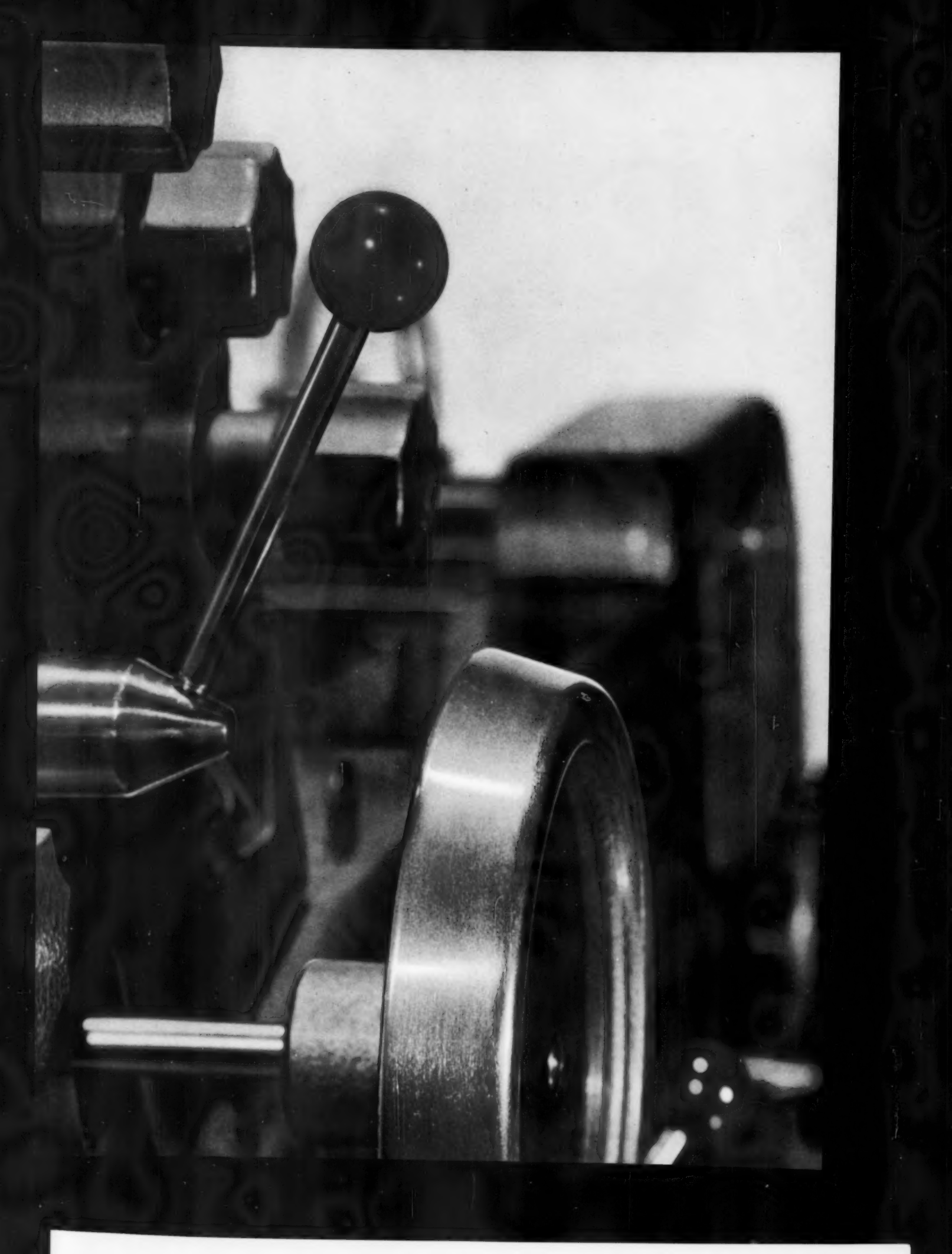
KEEP IT BRIGHT

BUSINESS AUTOMATION

born...
with
a
69
year
reputation
for
quality

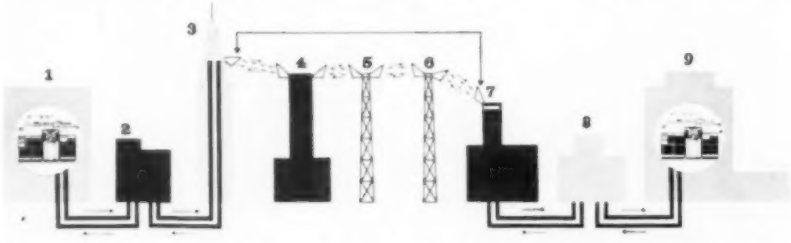
In the professional printing field . . . where quality reproduction is a daily must . . . ATF has achieved a position of unsurpassed leadership. Now, ATF fuses this quality reputation and experience with today's needs in office duplicating. The result: a line of offset duplicators that deliver flawless professional performance . . . always. Before you make any buying decision, compare with ATF. Write American Type Founders, 200 Elmora Ave., Elizabeth, N. J.

ATF



Ultra-fast IBM 1945 magnetic tape transmission unit (left) is linked to 7070-1401 system in IBM computer center.

Product Preview



Data originating at the computer center (1) goes by cable to telephone company (2) and Empire State Building microwave relay (3). It is received in Poughkeepsie (7), delivered by cable to local IBM office (9).

Use High-Speed Unit In Data Transmission

EMPLOYING the high-speed IBM 1945 magnetic tape transmission unit, the newly-announced IBM Tele-Processing system can "put two computer centers virtually in the same room" through the use of telephone lines and microwave.

The system, now commercially available, is being used by the IBM Applied Programming Department in New York to link its New York City and Poughkeepsie computer centers. Data orginating in New York City is transmitted via telephone lines to the New York Telephone Co. and broadcast via microwave from a transmitter atop the Empire State Building (see chart, above). The data is received by a Poughkeepsie microwave station 68 miles away, converted back to cable-carried impulses and then relayed to the local IBM computer center at a rate of speed approximately 1,000 times faster than the human voice.

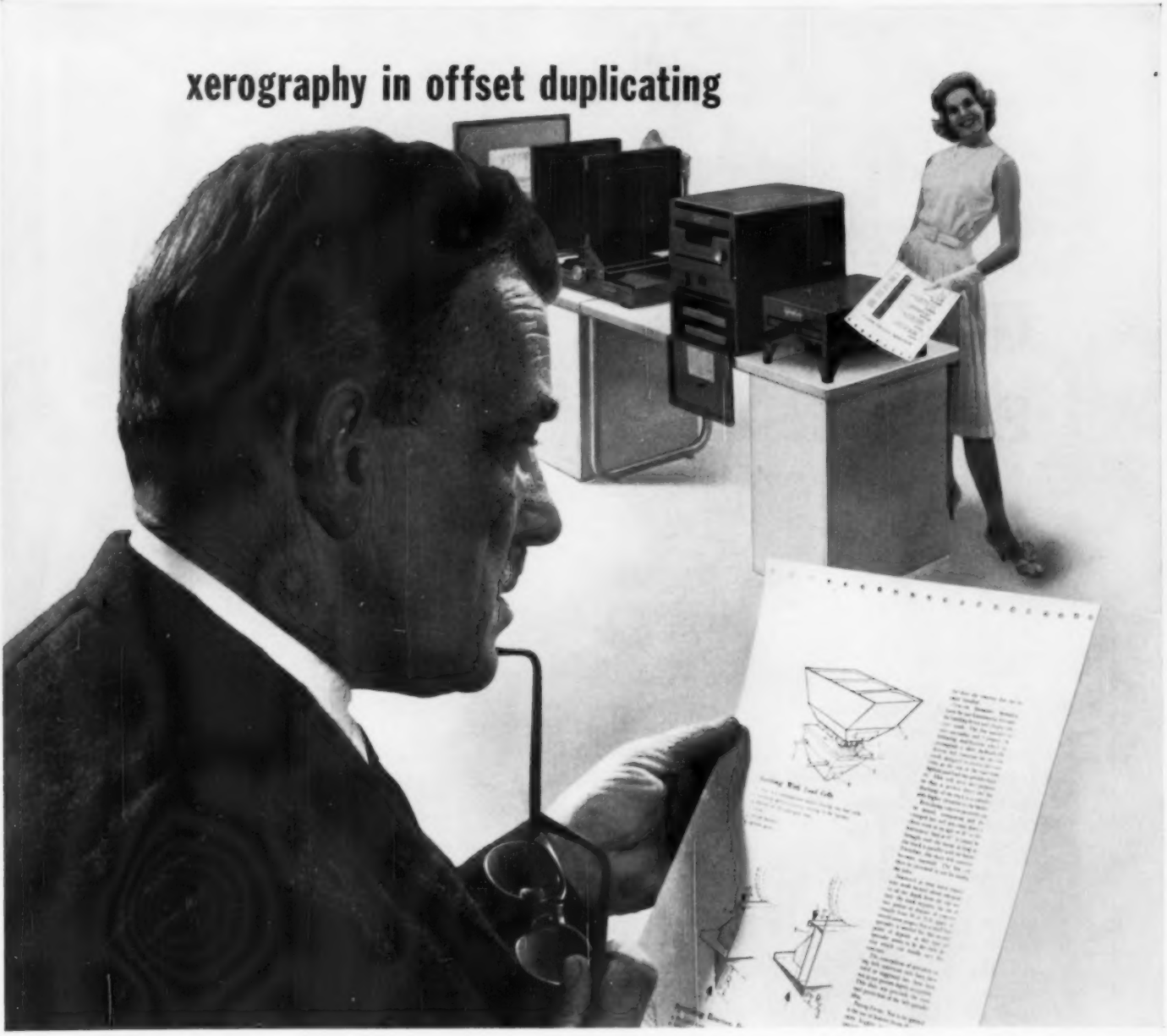
Vital link in the system is the 1945, which is capable of sending data, in either direction or both ways simultaneously, at a rate of 15,000 to 62,500 characters per second. The 1945 is a solid-state, self-powered unit that provides digital data transfer over broadband communications systems. Basically a remote tape-reading control unit, it is connected to the computer by a tape adapter unit.

Data can be transmitted in great volume from a 1945 equipped with a 729 tape drive to a solid-state computer equipped with another 1945.

IBM estimates a monthly net saving of $10,000 since completing the New York Tele-Processing installation. This savings includes $22,250 savings in released equipment and $8,500 savings in reduced travel costs.

The 1945 rents for approximately $1,100 a month. The telephone company estimates that a coast-to-coast line would cost in the neighborhood of $45 per mile per month. ■

xerography in offset duplicating



...makes paper and metal masters and other types of reproducibles...at lowest cost!

Xerography, the clean, fast, dry, electrostatic copying process, has revolutionized paperwork duplicating, and simplified the preparation of all types of reproducibles—paper and metal masters, visual-aid transparencies, and diazo intermediates. Hundreds of firms, large and small, now find it surprisingly profitable to do the work in their own duplicating department.

No special offset paper masters are required with xerography; use any ordinary offset-master material you have in stock. An operator's time is shorter because you get a good master every time and because there are no critical adjustments for exposure—hence no waste. Supplies cost only a few pennies per master.

Xerographic master-making equipment requires no capital investment. You can have it at a modest rental. Even if your volume is low, you'll find it practical because of our unique Pay-as-You-Copy rental plan.

Xerographic equipment enlarges, reduces, or copies size-to-size. Quality is superb; often it's hard to tell runoff copies from originals. And in some instances, such as dog-eared and cracked engineering drawings, copies are often superior to the original.

Offset paper and metal masters prepared by xerographic master-making equipment may be of any original—no limitations! Use xerography now as an inexpensive substitute for film negatives in the reproduction of halftones, photographs, and large solid areas.

Why not look into the benefits you can expect?

XEROX CORPORATION (formerly Haloid Xerox Inc.), 61-181X Haloid St., Rochester 3, N. Y. Branch offices in principal U. S. and Canadian cities. Overseas: Rank-Xerox Ltd.

XEROX
CORPORATION

For More Information Circle Reader Service Card No. 169

Insurance Firm Uses Duplicator, Ends Tie-Ups

From microfilm, the company's photographic department prepares 6x9-in. copies of the original legal documents at a rate of 600 per day.

BY PERMITTING Washington Title Insurance Co., Seattle, to reproduce important land records instead of retyping them, modern diazo copying equipment has helped to reduce title search time, streamlined the company's search procedures, reduced filing space needs, cut labor costs and eliminated the possibility of transcription errors.

An affiliate of Title Insurance and Trust Co., Los Angeles, Washington Title serves the Pacific Northwest and Alaska. The company is required to copy approximately 2,000 property records daily for its own use.

"One of the chief bottlenecks in making a title search," explains Richard J. Annibal, assistant vice president, "is in making various land records available to the examiner in the title insurance office. Since the original records must remain on file in the County Recorder of Deed's office, the problem boils down to how documents can be copied accurately and made available quickly to our examiners. The diazo copying technique has provided the answer for us."

Before converting to diazo equipment as a means for copying these records, Washington Title Insurance kept a crew of several full-time typists in the County Recorder's office making abstracts of documents. These abstracts were typed on legal size paper, then bound 1,000 to a book and filed for future reference.

When a title search was needed, a list of the necessary documents was made and an examiner would pull the books containing those documents, return to his desk and examine the title. In addition to the excess time and motion involved, this procedure tied up several thousand abstracted "takeoffs" of documents.

Frequently, the books in the possession of one examiner were needed by another examiner making a different title search, and he could not proceed until the books were returned to the file racks. The obvious result was inefficient use of the time, higher salary costs and the need for vast amounts of filing space.

The system the company now uses is centered around a Revolute Star whiteprinter made by Paragon Revolute Div. of Charles Bruning Co.

"The new system gives us an efficiency increase of 18 to 20 percent in over-all processing of title orders," says Annibal. "In addition, we save the equivalent of four full-time people who formerly worked in the County Recorder's office, and we make better use of personnel."

Cheaper by the dozen

Documents in the County Recorder's office now are photographed on 35mm microfilm. Two full-time employes and one part-time employe handle all microfilming.

A photographic studio transfers these microfilms to 6 x 9-in. translucent paper suitable for

Files containing translucencies are used to gather the necessary documents for an examiner to use in determining whether title insurance can be rendered to the property-buyer.

reproduction on the whiteprinter. In King County alone, the territory served by the Seattle office, about 600 documents per day are processed in this manner.

The key to maintaining efficiency is producing fast copies of the translucencies and keeping rejects at a minimum. Operating at 45-ft. per minute, the whiteprinter is designed to hold unusable copies to a minimum. On the 24-in. model, two operators can work side by side simultaneously.

To make copies, the machine operator places the 6 x 9-in. translucency on top of a sheet of sensitized paper and feeds both through the copier. The high speed operation makes it possible for the operator to feed the papers as fast as she can put them together. Both the translucency and the diazo copy are returned to her on delivery trays located on the front of the machine.

Two copies of the translucencies are made immediately. One is used for posting to the tract books, and the other is used to compile a chronological file according to the closing date of the title order. The copies are attached to the order and put on the examiner's desk, enabling him to give quicker clearance to customers on recording data.

The 6 x 9-in. translucencies are loose filed, 100 to a folder, in cabinets for future use. When an order for title insurance is received, it is processed through the starter section, where chains of documents are made up to be used in processing the title. The chain lists the documents that must be examined to determine that title insurance can be rendered.

He never leaves his chair

These chains are sent to the reproduction department where the translucencies have been filed. Diazo prints of the necessary documents are made and attached to the order. These are delivered to the examiner for processing. Thus, he can remain at his desk and examine all documents pertaining to the order by using the diazo copies. If his examination reveals that title insurance can be issued, the diazo copies are used by the stenographers in typing the title insurance policies.

The translucencies are returned to file immediately after copies are made, and are never out of file for more than a few minutes. It is not necessary to track a translucency down among the various examiners, as was required under the old system. ■

News Feature

James Stuart, president of Dayton Power and Light Co. (left), discusses his plan for magnetic imprinting on customer's bills with Robert Oelman, president of NCR.

Utility Will Use Magnetic Ink on Customers' Bills

DAYTON Power and Light Co. has announced plans to build a new, million-dollar electronic data processing center; install two NCR 315 computers; and begin using magnetic imprinting on customers' bills, becoming the nation's first utility to use magnetic imprinting for this purpose.

Customer records will be stored in NCR's CRAM (Card Random Access Memory) file on replaceable cartridges of magnetic cards. Each cartridge contains 256 such cards, capable of storing over eight million digits of information. The computer can select and read any card from a cartridge in one-sixth of a second.

Magnetic tape memory units will be used to store general accounting information.

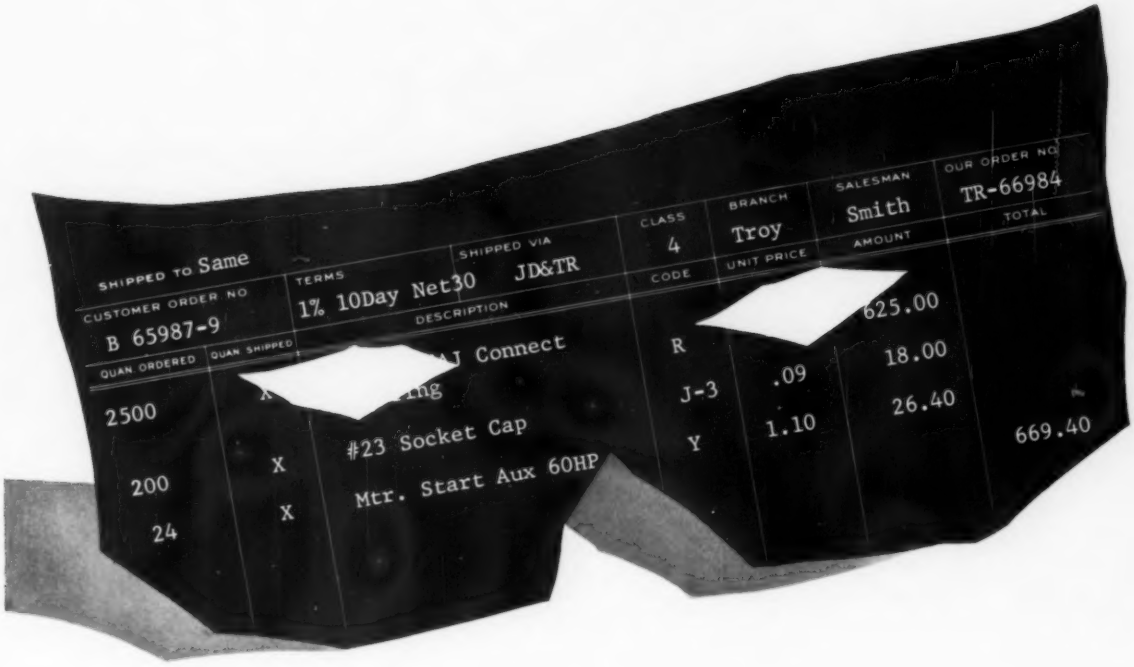
National Cash Register magnetic ink encoders will be used to preimprint the customer's account number on all monthly gas and electric bills. When bill stubs are returned with payment, they will be read by an NCR sorter-reader, which can feed up to 42,000 characters of information per minute into the computer. The computer will post the payments to the customers' accounts (stored on the magnetic cards) at the rate of 15,000 transactions every 40 minutes.

Other equipment in the system, which will be installed in late 1962, will be a high-speed paper tape reader, six magnetic card memory units, two magnetic tape memory units and two high-speed printers. The printers are capable of preparing 12,000 bills per hour.

Meter readings, new meter installations, changes of address, billings for appliance purchases and other accounting transactions will be recorded on 13 NCR desk-model bookkeeping machines and eight NCR typewriter-equipped accounting machines, each linked to tape recorders. As each transaction is recorded, the information is automatically punched in paper tape, which subsequently is read directly into the computer system.

Other uses for the computer system, says James Stuart, president of DP&L, will be payroll accounting, accounts payable, property and plant record maintenance, inventory records and engineering applications.

DP&L has 525,000 customers throughout West Central Ohio. ■



Don't let paper work rob you of profits!

Are your business forms stealing valuable time and efficiency? Let Reynolds & Reynolds "custom-tailor" your business forms to fit your needs . . . protect your profits and enhance your prestige. If it's a multicopy, die-cut, combination form . . . or a simple memo sheet . . . individual or continuous . . . colorful or plain . . . if it's a "working" business form you need . . .

Call a REYNOLDS & REYNOLDS REPRESENTATIVE today . . . *offices in most principal cities . . . no obligation!*

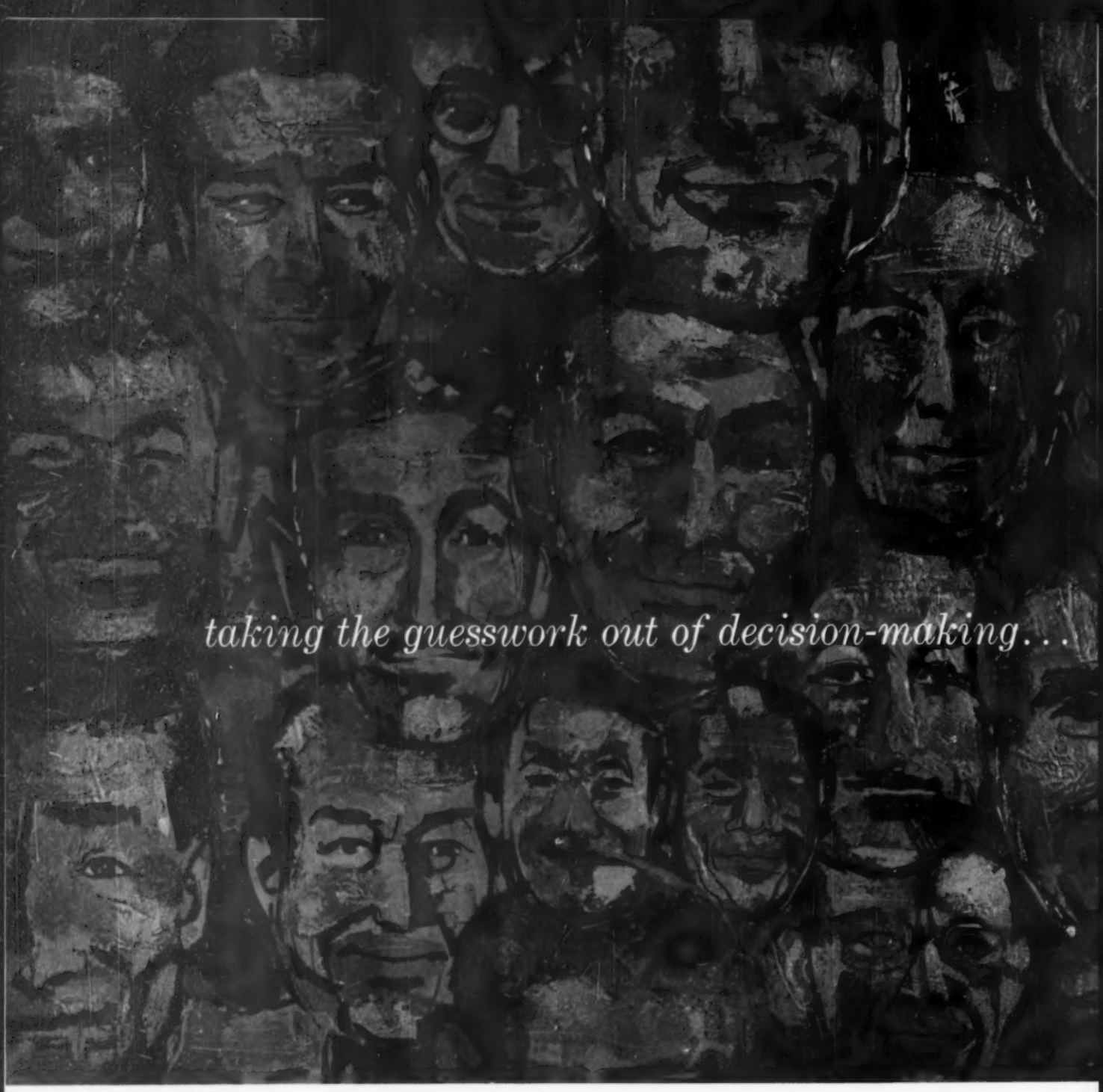
The Reynolds & Reynolds Company

DAYTON, OHIO • CELINA, OHIO • DALLAS, TEXAS • LOS ANGELES, CAL.

BUSINESS FORMS AND SYSTEMS SINCE 1866

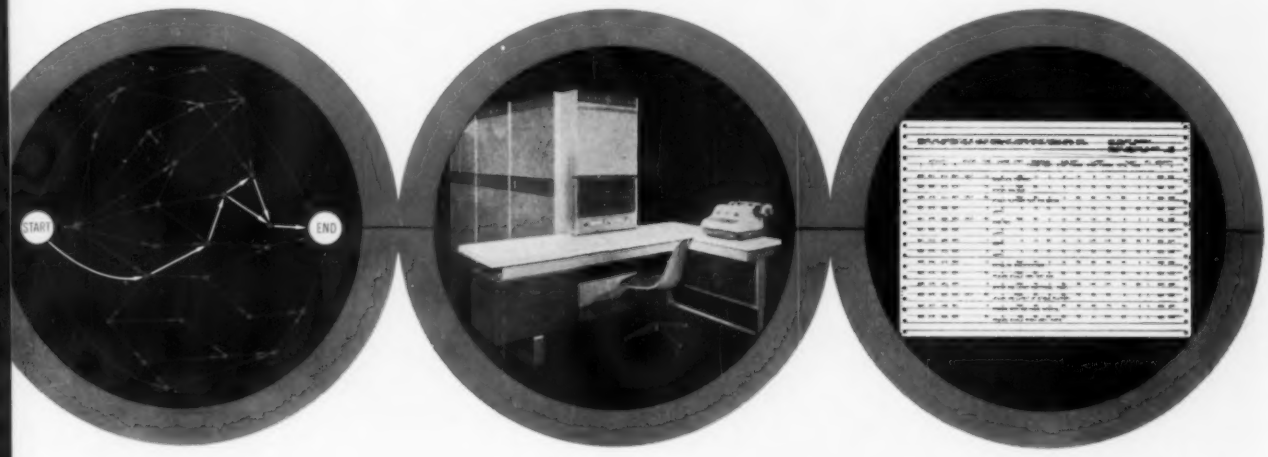
Also manufacturers of Post-Rite Pegboard Accounting Systems

For More Information Circle Reader Service Card No. 170



- *An exciting new profit-making application for the General Electric GE 225 Information Processing Computer*
- *From project personnel via arrow diagram and General Electric GE 225 to minimum time-cost schedules*
- *One more reason why you should investigate the possibilities of the versatile GE 225*

ENGINEERING R & D • HIGHWAY CONSTRUCTION • BANK AUTOMATION • SLUM CLEARANCE • PLANT SHUT-DOWN •
CONVERSION TO COMPUTER • NUCLEAR POWER PROJECTS • MISSILE PRODUCTION • REFINERY MAINTENANCE



PRECISE PROJECT PLANNING WITH THE GE 225 AND CPM

• To drastically reduce the need for managerial guesswork and to deliver precise data required for timely decision-making, General Electric *now* offers Critical Path Method (CPM) processing capability on the GE 225 computer.

• A new, advanced technique for project planning, scheduling and control, CPM can pinpoint your critical jobs to prevent bottlenecks before they result in costly and unnecessary delays.

• CPM is based on a pictorial project representation—an "Arrow Diagram" or "Project Network"—which shows the relationship and sequence of work to be done.* As employed by the GE 225, the Critical Path Method can be used for all types of project problems—from manufacturing, maintenance or construction planning to corporate planning, product launching and missile countdown.

• The CPM program developed specifically for the GE 225 efficiently processes *both* COST *and* TIME information on each job in the project to obtain *minimum* time-cost schedules. As a result, management and project personnel alike obtain pertinent and timely information on plans and schedules.

• The GE 225 CPM application is an advance providing for automatic event re-numbering and direct priority weighting of each project job in the most efficient manner.

• General Electric sales representatives, backed up by new General Electric Computer Department Information Processing Centers, can further explain this exciting and flexible use for a GE 225 and are ready NOW, working with your consultants and management, to integrate information handling equipment into your business.

• The application of the GE 225 to CPM represents one of many new advances pioneered by General Electric. It would be a wise move for you to investigate the benefits of the Critical Path Method, GECOM and other General Electric advances—all available for the GE 225. GECOM is the General Compiler which processes English language statements (COBOL), Algebraic expressions (ALGOL), Structured decision tables (TABSOL) and the File and Report Information Processing Generators (FRINGE).

For more information, write to General Electric Company, Computer Department, Section 65Z9, Phoenix, Arizona, or contact your nearest General Electric Computer Department District Office listed below.

Atlanta: 270 Peachtree St. N.W., 522-1611 • **Boston:** 140 Federal St., HU 2-1800, Ext. 311 • **Chicago:** 120 S. La Salle St., 782-5061 • **Cleveland:** Williamson Bldg., 215 Euclid Ave., SU 1-6822 • **Dallas:** 3200 Maple Ave., RI 8-0589 • **Detroit:** 680 Antoinette St., TR 2-2600 • **Houston:** 4219 Richmond Ave., MO 7-3301 • **Kansas City, Mo.:** 106 W. 14th St., GR 1-2919 or GR 1-2920 • **Los Angeles:** 1010 S. Flower St., DU 1-3641 • **Louisville:** Bldg. 6, Appliance Pk., GL 4-7511 • **Minneapolis:** Plymouth Bldg., 6th & Hennepin, FE 2-7569 • **New York:** 122 E. 42nd St., PL 1-1311, Ext. 3205 • **Philadelphia:** 3 Penn Center Plaza, LO 8-1800 • **Phoenix:** Guaranty Bank Bldg., 3550 N. Central Ave., AM 4-3741-2 **Pittsburgh:** 1634 Oliver Bldg., Mellon Sq., AT 1-6400, Ext. 566 • **San Francisco:** The Russ Bldg., 235 Montgomery St., DO 2-3740 • **Schenectady:** Bldg. 2, 1 River Rd., FR 4-2211, Ext. 5-4405 • **Seattle:** Dexter Horton Bldg., 710 Second Ave., MA 4-8300 • **St. Louis:** Paul Brown Bldg., 818 Olive St., GE 6-4343 • **Syracuse:** 1010 James St., GR 6-4411, Ext. 6141 or 6142 • **Washington, D.C. Area:** 7401 Wisconsin Ave., Suite 514, Bethesda, Md., OL 2-8100 • **In Canada:** Canadian General Electric Co., Ltd., Electronic Equipment and Tube Dept., 830 Lansdowne Ave., Toronto, Ontario, Canada. **Outside U.S.A. and Canada:** Producer Goods Export Department, International General Electric Company Division, 150 East 42nd Street, New York City, New York, U.S.A.

INFORMATION PROCESSING
AUTOMATED BY GENERAL ELECTRIC

Progress Is Our Most Important Product

GENERAL ELECTRIC

CPA-65 (6-61)

*THIS METHOD WAS DEVELOPED BY MAUCHLY ASSOCIATES, AMBLER, PENNSYLVANIA—TORONTO, CANADA.

For More Information Circle Reader Service Card No. 171

It takes seconds to change printing heads on the IBM Selectric typewriter. Six type faces, including script, are available.

Stationary carriage has been made possible by Selectric's traveling carrier (printing head and ribbon cartridge).

IBM Typewriter Features Revolutionary Changes

Product Preview

THE SELECTRIC electric typewriter, manufactured by International Business Machines Corp., is revolutionary in every sense except outward appearance.

The new typewriter has no key bars. Its characters are imprinted on a golf ball-sized (1⅜-in.) printing head, four rows of 11 characters per row. Easy-to-change printing heads (cost: $15 each) come in six type faces, including script.

The elimination of type bars means that there are no key jams, and it means that the unit is easier to clean than conventional machines.

The printing head sits atop a rocker assembly which, in turn, sits atop a small carrier. Also mounted on this carrier is a two-spool cartridge housing 18 yards of super-sharp nylon ribbon. Ribbons come in 10 varieties, including black record, red-black, plate-writing and seven colors. Ribbons can be changed in seconds, and with no finger-smudging.

The over-all carrier mechanism (including printing head and ribbon cartridge) travels back and forth across the interior of the typewriter on a metal rod. The carriage on the Selectric typewriter is stationary; although it continues to roll vertically, it does not move back and forth.

The stationary carriage means that less desk space is required for the typewriter since no allowance has to be made for the side-to-side movement of the carriage. It also means that the typewriter is not jarred back and forth during typing operations.

In spite of the contour keyboard (keys are curved to fit the arc of moving fingers), the Selectric seems to be no different than most other models in outward appearance. It comes in nine color combinations and two sizes: Model 721, which weighs 31-lb., takes 11-in. paper and sells for $395, and Model 725, which weighs 37-lb., takes 15½-in. paper and sells for $445.

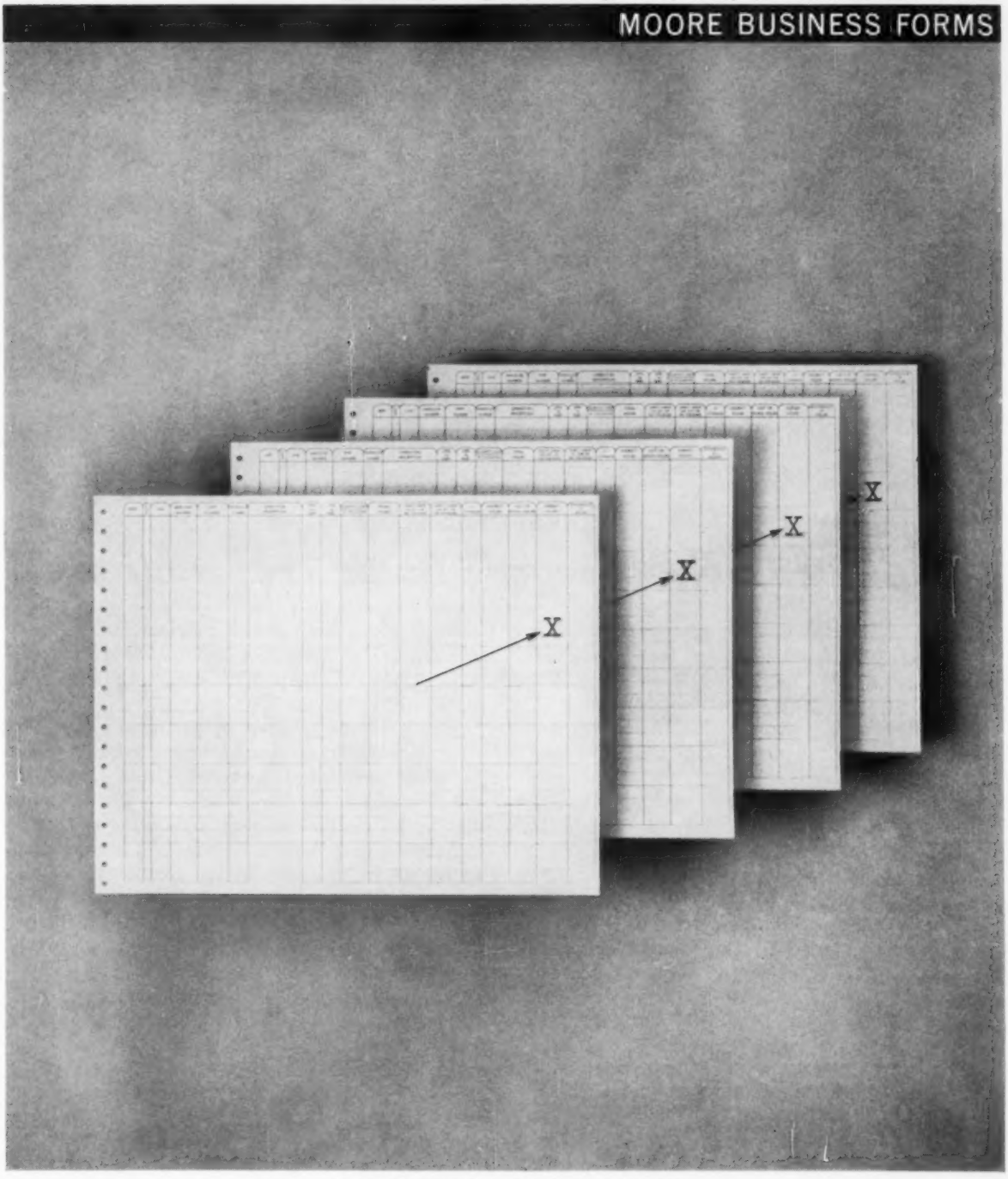
The Selectric will print at a rate of 15½ characters per second or 186 words per minute. ■

PERFECT
PART-TO-PART
REGISTER
WITH NEW
SPEEDIFLEX

Efficiency breakthrough . . . bringing new positive advantages to tabulating runs. The revolutionary flex-cut construction allows flexibility in the flow of forms, then a pulling together for perfect part-to-part register at the writing point. With printing accuracy you have dependable behavior and forms-handling efficiency for system control. Only Speediflex offers it. Only Moore offers Speediflex. Build control with Moore Business Forms.

Moore Business Forms, Inc. • Niagara Falls, N.Y. • Park Ridge, Ill. • Denton, Tex. • Emeryville, Calif. • Over 300 offices and factories in North America.

MOORE BUSINESS FORMS



For More Information Circle Reader Service Card No. 172

Product Preview

Teller inserts bankbook in Univac Unisaver teller set and savings bank transactions are sent to a central computer and recorded.

Computer Device Records Bank Transactions

A COMPUTER input, teller-prepared for use in savings bank accounting, has been announced by the Univac Div. of Sperry Rand Corp. The Unisaver provides bank tellers in any branch location with a simple, direct means of communication, plus input to the large scale Univac 490 Real Time System.

Using the system, complete banking transactions can take place at the teller's window in seconds.

The teller inserts the savings bankbook into the Unisaver and positions it for the entry as the transaction takes place. The set transmits account numbers, amounts and other information to the computer in which the bank records are stored. Updated information is transmitted back from the computer to the Unisaver, which records and prints the transaction on a journal tape and in the customer's bankbook simultaneously. Pre-computed interest is automatically posted in the bankbook.

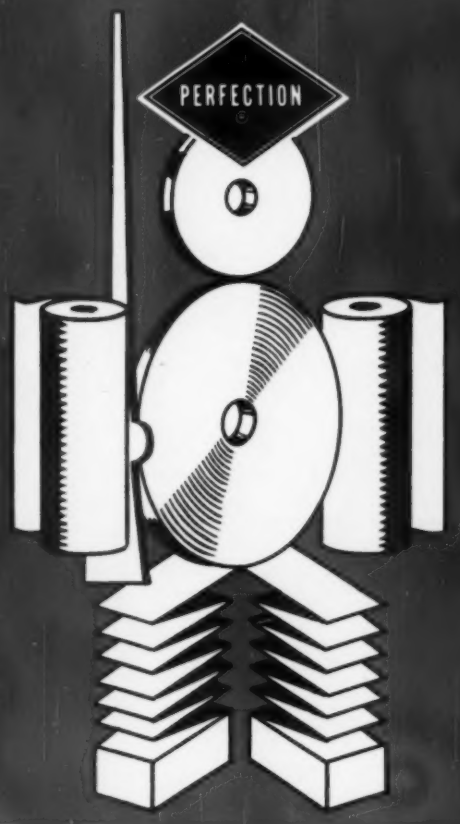
Tellers will communicate directly with the centrally-located computer, where all account records are stored on high speed, random access, mass storage drums. Messages sent from the teller set interrogate information or alter specific data in the system.

The Unisaver utilizes regular leased-line voice channel facilities. Data is transmitted at the rate of up to 1,200 bits per second. Up to 4,096 Unisaver teller sets may be utilized in a single Univac 490 Real Time on-line bank accounting system.

Keys are provided on the Unisaver for the teller to record transactions in the computer. Typical keys are: Deposit cash, Deposit local check, Withdrawal, Balance inquire, and Passbook update. An amount keyboard is utilized to supply numerical information. Counters are provided to indicate the transaction totals for each teller.

Transaction totals may be printed out on the journal tape by depression of a key. The tape also is utilized for informational transactions such as balance inquiry and teller's balance, and all input messages entered into the Unisaver by the teller are printed on tape before transmission to the computer. Circle No. 101

IN DATA PROCESSING PERFECTION® IS YOUR PROTECTION



PERFECTION

DATA PROCESSING TAPES
DESIGNED BY
SPECIALISTS
FOR
ALL PUNCHED TAPE NEEDS

There are many data processing tapes on the market today, all with certain characteristics. But when you want the brand that combines ALL the good features of ALL of them, and the one that assures unexcelled performance from your machines—then specify PERFECTION.

Perforator and Computer Tapes • Single Copy Printer Papers
Multi-Copy Printer Papers

Inventories in 90 locations

USE COUPON BELOW FOR ACTUAL SAMPLES

PAPER MANUFACTURERS COMPANY
PHILADELPHIA 15, PENNSYLVANIA
Branch Factories: INDIANAPOLIS, IND. • NEWARK, CALIF.
Sales Representatives:
ATLANTA • CHICAGO • CLEVELAND • DALLAS
KANSAS CITY • LOS ANGELES • NEW ENGLAND
NEW YORK • SAN FRANCISCO
SYRACUSE

SALES DEPARTMENT
PAPER MANUFACTURERS CO.
PHILA. 15, PA.

Without obligation, please send me your booklet containing actual samples of PERFECTION Communication Papers.

Name_____
Firm_____
Position or Title_____
Street_____
City_____ Zone____ State_____

For More Information Circle Reader Service Card No. 173

PROBLEM: tieing production and shipping to sales trends

SOLUTION: a Western Union Private Wire System

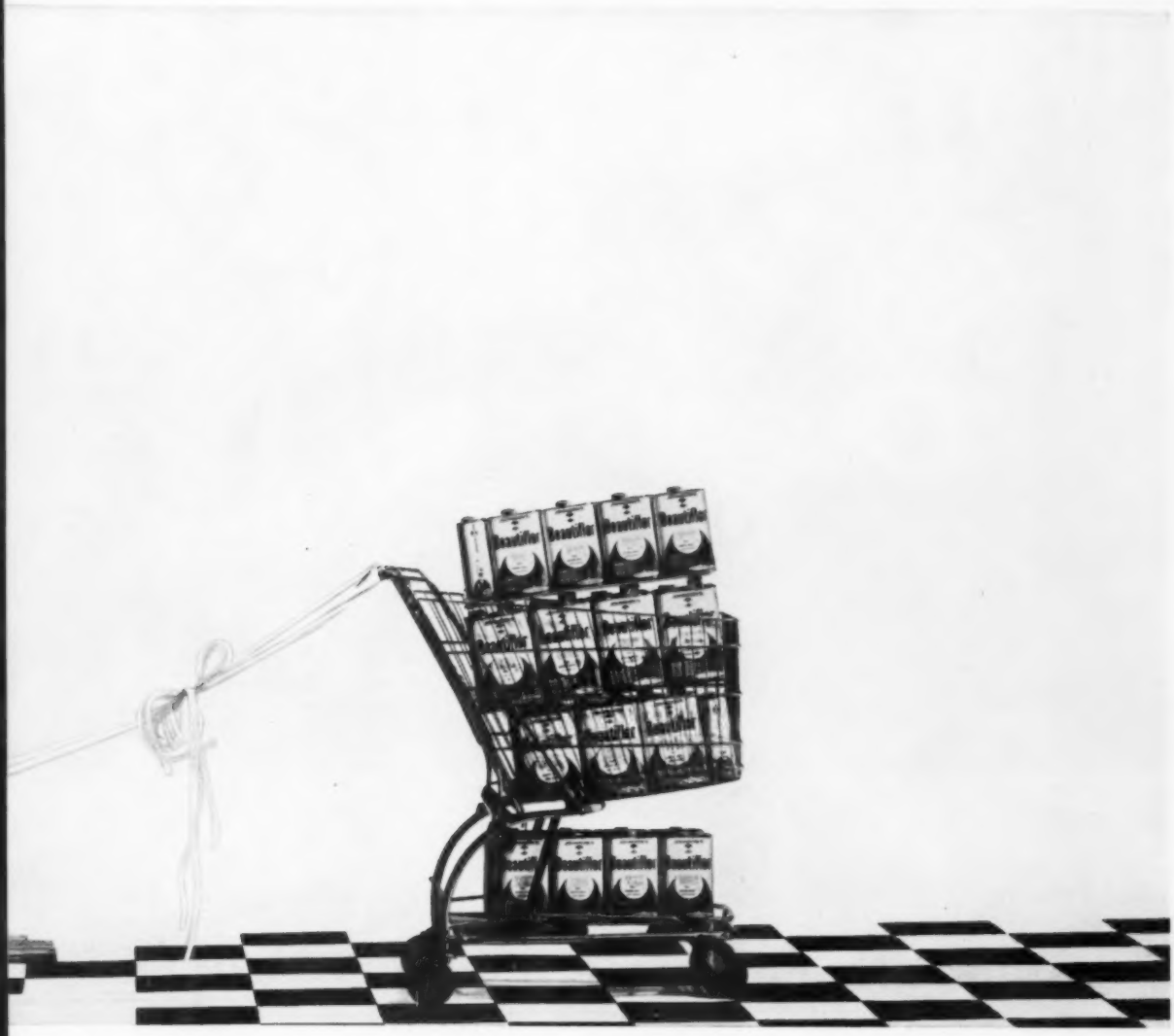
A sudden upswing in sales—if not reported promptly—could leave customers reaching for empty shelves or a competitive product. But—by spotting a buying trend as soon as it begins to develop—Johnson's Wax keeps shelves amply stocked while maintaining minimum, balanced inventories of its entire line in each of the company's 23 warehouses.

Helping to do this complex job is a Western Union Private Wire System. Here's how it works. As soon as a sales order reaches any Johnson's Wax field office, the information is transferred immediately to punched tape; speeds along private wires to headquarters at Racine, Wisconsin; and is fed daily into an electronic computer.

Each day, information on more than 1000 orders flashes over this 6374-mile system. The data is analyzed and correlated with production and shipping schedules, thus preventing costly out-of-stock situations.

Sales, production, accounting, purchasing—there isn't a division of Johnson's Wax that doesn't save time and money on written messages or data for processing with error-proof Western Union Private Wires.

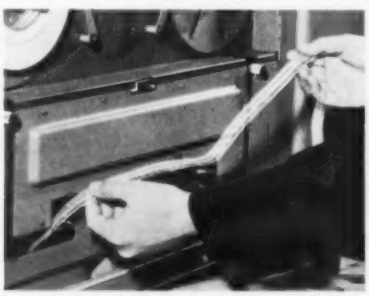
Your company—like Johnson's Wax—can improve over-all communications with a Western Union Private Wire System specifically designed for your needs. For all the facts, without obligation, wire collect to: Western Union, Private Wire Division, New York, N.Y.



. within hours!

How Johnson's Wax stocks shelves using its Private Wire System

(1.) Sales information received by each Johnson field office is transferred immediately to punched tape, then sent over a Western Union Private Wire System to the communications center at headquarters.

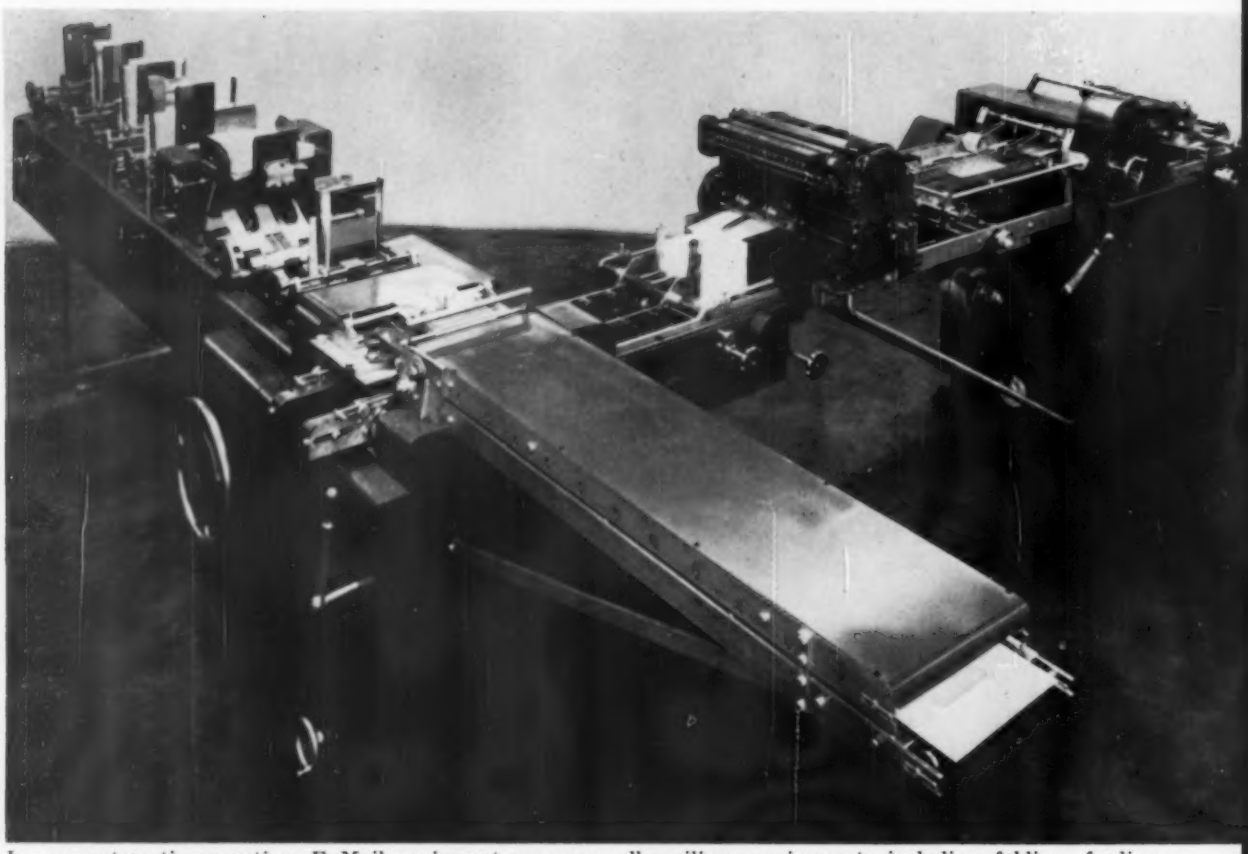


(2.) Data received on tape is fed into computer at Racine headquarters. Computer prices the order; checks customer credit; prepares shipping documents, invoices, sales and inventory reports; and updates accounts receivable.

(3.) Analyzing sales data received from the field, computer indicates development of buying trends as they occur. Production and shipping can then be alerted, to assure balanced inventories for Johnson's entire line.

WESTERN UNION . . . first in Private Wire Systems

For More Information Circle Reader Service Card No. 174



In one automatic operation, EnMail equipment processes all mailing requirements including folding, feeding, collating, nesting, making envelopes, sealing, counting, stacking and detecting errors.

Product Preview

Use Automatic Equipment for Mass Mailings

A MAILING and enveloping machine which prepares complete mailings at the rate of at least 100 per minute has been introduced by EnMail Machine Corp.

Designed for speed and economy, the EnMail equipment features complete mailing facilities in one compact unit. Letterhead and enclosures of the same or different sizes and thicknesses may be assembled, and all or part of the enclosures may be nested by completely folding the letterhead around them. If an address card is used, it is placed on top of the folded letterhead containing the nested enclosures.

From a roll of paper, an envelope—with or without a glassine or cellophane patch window—may be manufactured (again around the letterhead, enclosures and address card).

A corner card and postal marks, as well as any other printed message, may be placed on either side of the envelope via a built-in rotary printing press which uses either rubber plates or metal type. Printing may be done in one or more colors. Stamps or postage by meter may be affixed on the envelope by using any standard accessory; counting and stacking facilities will complete the mailing, ready for the post office.

Because of its flexibility, EnMail mailing equipment can be adjusted to make and print different or unusual sizes of envelopes.

Feeders are of the vacuum suction bottom-feed type. Letterheads are folded accurately into three even parts. Detectors are provided to indicate by a light if there are double insertions or skips and then stop the machine. Sealing is accomplished by a cold glue, sealed under pressure process.

The mechanism has six stations, including one sheet feeder for letterheads and one station for address card. Three motors power the unit, which is controlled by a simple lever-action switch. Additional stations can be added or eliminated.

The machine is now in production and is being sold to large-scale mailers. Circle No. 102

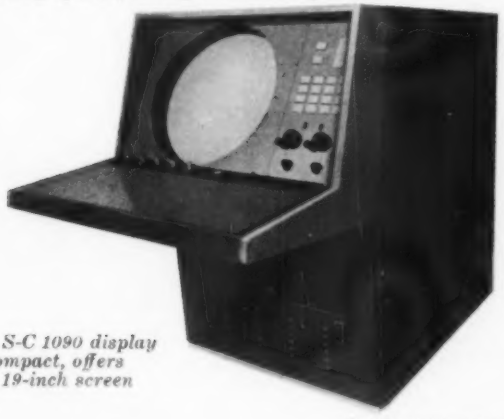
First "off-the-shelf" high resolution display for low cost computer monitoring

General Dynamics/Electronics' new S-C 1090 is the first "off-the-shelf" computer display featuring high character legibility on a large CRT screen. The S-C 1090 incorporates an improved 19-inch CHARACTRON® Shaped-Beam Tube and is capable of displaying 1000 flicker-free, high-resolution characters simultaneously anywhere on the tube face. Thirty thousand or more characters per second may be displayed with extreme brightness and contrast.

MOST VERSATILE DISPLAY. The S-C 1090, operating either on-line or off-line, is designed to monitor digital computer systems and present data for decision or information purposes. Alphanumeric or symbolic characters, and vectors may be presented singly or in combination.

Maximum flexibility for various applications has been provided by a number of special modular optional features for the S-C 1090 display which include:

1. *Internal Test Pattern Generator* – permits complete set up and calibration without tying up the computer or data handling system, saving time and expense.



The S-C 1090 display is compact, offers full 19-inch screen

2. *Vector Generator* – capable of drawing straight lines between points on the tube for graphic presentations.

3. *Format Generator* – reduces the S-C 1090's input requirements and doubles display rate from computer.

4. *Input Register* – provides console with buffer storage for position and character selection information.

5. *Offset & Expansion* – can enlarge any segment of tube screen to full screen size for more detailed view.

6. *Category and Feature Select* – allows selection of information for display without computer intervention.

SUPERIOR CHARACTER FORMATION. The CHARACTRON tube's unique method of shaped-beam character formation offers proven advantages over less precise line-segment, dot, or scan character forming techniques.

Symbols and characters are obtained by extruding electron beams through stencilled openings in a metal disc called the matrix. After passing through the matrix, the character-shaped beam is directed to an appropriate spot on the tube face. Most matrix have 64 characters.

COMPACT DESIGN. The S-C 1090 is a compact unit measuring 32 inches in width, 45 inches in height, by 66 inches in length. The unit's low silhouette allows operators to actually look over the top of the console for simultaneous viewing of the tube screen and projected large screen displays.

S-C 1090 APPLICATIONS. The S-C 1090 is capable of tabular, situation or graphical presentations and can be used in a wide range of computer intervention, monitoring and retrieval jobs. It is suitable for laboratory, simulation, Air Traffic Control and surveillance applications.

For additional information on the S-C 1090 Direct View Display or other General Dynamics/Electronics readout and display systems, write General Dynamics/Electronics, Information Technology Division, Dept. B-50, P.O. Box 2449, San Diego 12, Calif.

GENERAL DYNAMICS | ELECTRONICS

For More Information Circle Reader Service Card No. 175

At any remote location, a 1001 Data Transmission Unit reads punched cards and transmits the information over regular telephone lines.

IBM 1001 DATA TRANSMISSION SYSTEM ... new low cost way to send punched card data ... by telephone

This IBM 1001 Data Transmission System lets you send business information in punched card form, from any office, plant or department to your central data processing installation at the cost of a telephone call.

It speeds collection of information concerning inventory, purchases, payroll, production, etc., keeps you continually informed of what's happening in your business while it's happening.

And it does it at low cost.

A simple, desk-top 1001 Data Transmission unit and telephone at each remote location plus a telephone and card punch at your data processing center put you in business. The operator at the remote unit dials the data processing center, inserts a punched card into the transmission unit, adds additional information with the simple keyboard, and presses a button.

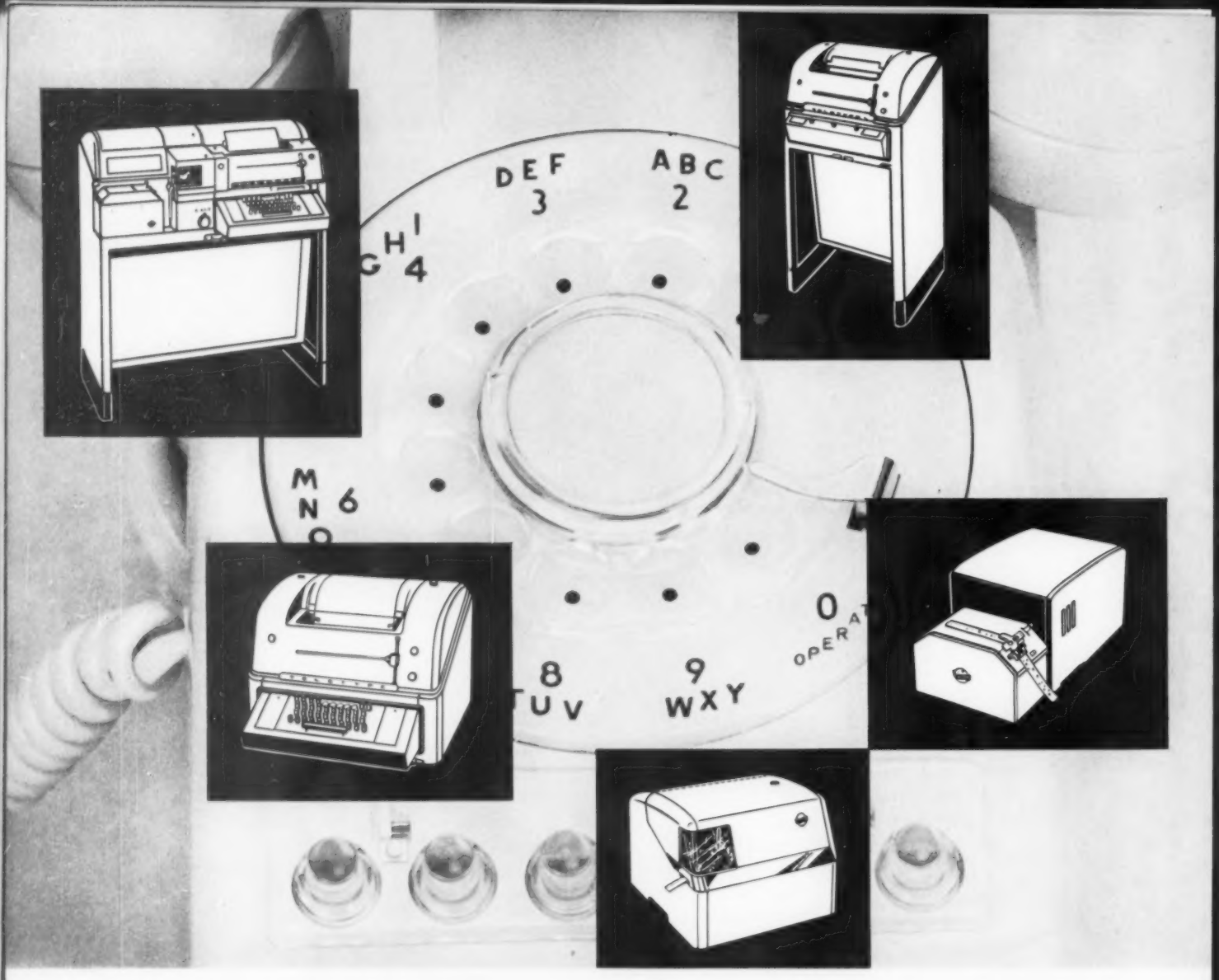
The rest is automatic. The equipment reads the card, transmits the information over your regular telephone lines, and reproduces an identical punched card, ready for processing. You can connect a number of departments, plants, offices or customers with this 1001 Data Transmission System.

This is another example of IBM TELE-PROCESSING* Systems which help business act faster by speeding up collection of the facts on which action is based. TELE-PROCESSING Systems are available for coordination of anything from a warehouse to an entire company.

*Trademark

At the data processing center, an IBM Card Punch receives data by phone and automatically punches it into a card, ready for processing.

IBM®
DATA PROCESSING



Teletype equipment in Data-Phone service

All Teletype sending and receiving equipment—page printers, tape punches and tape readers—can be used in Data-Phone service, the new Bell System method of data transmission via regular telephone lines.

Data can be speeded over local or long distance lines—to a single destination or to several destinations simultaneously. The data can be received on plain message paper . . . punched paper tape . . . or marginally perforated business forms of almost any size. And always there is a "home record" of what is sent.

Significant paper work simplification and time savings can be achieved in handling accounting and billing information, inventories, payrolls, invoices, sales orders, ticket pick-up and numerous other kinds of business detail. If desired, punched tape can be obtained as a by-product of both sending and receiving operations, for later use with business machines.

A growing number of firms are already using Teletype equipment over Data-Phone circuits. For example, companies that purchase large quantities of airline space place orders by phone, then receive tickets on Teletype printers right in their own offices. With this method, tickets are received faster, messenger service is eliminated, and records for accounting purposes are automatically provided.

Teletype Corporation manufactures page printers and tape units such as the Model 28 equipment illustrated above for the Bell System and others who require the utmost reliability from their data communications facilities.

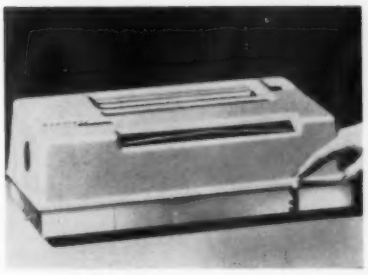
If you would like to investigate the advantages of Teletype equipment for your business, write to Teletype Corporation, Dept. 17-J, 5555 Touhy Avenue, Skokie, Illinois.

TELETYPE®
CORPORATION • SUBSIDIARY OF Western Electric Company INC.

For More Information Circle Reader Service Card No. 176

Business Automation Showcase

Photocopier



An economical copying machine for the office, the Expediter 10 has been introduced by Photek, Inc., subsidiary of Textron. Diffusion transfer papers also accompany the announcement as another of the company's developments. Sharp images on white paper and speeded process time, allowing almost immediate peel-apart after exposure and development, are featured. The machine has push button control and a disposable developer cartridge. Circle No. 113

Furniture Feature

Built-in Speakerphones housed in Globe-Wernicke's Echelon cabinets eliminate the necessity for executives to pick up telephones at their desks. This feature of the company's new furniture line houses six-button telephone selectors and retractable cords, stationery trays that roll out for easy access when the door is opened. Circle No. 119

Proof Encoder

A Proof Attachment Encoder, which permits operators to encode amounts with maximum efficiency during the normal proofing operation, has been offered by National Data Processing Corp. Amount of item is transmitted automatically from the proof machine to the encoder by simply indexing the amount in the conventional manner and depressing the proof machine motor bar. When the document is placed in the encoder transport, it is automatically positioned, encoded and routed into the proof machine, always in view and readily accessible. In addition to the amount, two transaction code digits can be designated and encoded automatically on the basis of bin selection. Circle No. 112

Tape Preparation System

The new Tapemaker is considered by the manufacturer, Invac Corp., to be the first typewriter-operated paper tape preparation system that uses photoelectric encoding techniques that is available commercially today. The use of photoelectric techniques in the Tapemaker eliminates operational and constructural complications. Selling for about $1,600, the Tapemaker consists of a standard manual or electric typewriter, the photoelectric encoder and a paper tape punch. All of these units are in modular form to facilitate assembly and reduce costs. The Tapemaker can be used to prepare any code in five to eight level tape. The photoelectric encoder consists of a number of data light channels and associated binary-coded shutters. When a key is depressed, the corresponding shutter modulates the light channels according to the code of the particular shutter. Simultaneously, photo cells at the end of each light channel transmit the binary-coded data to the paper tape punch. In addition to photoelectric encoding, other Tapemaker design features include: all solid state circuitry, direct-drive paper tape punch, dual key logic, an electronic parity check and special non-print functions. Circle No. 124

for latest industry news, subscribe to BUSINESS AUTOMATION

NEWS REPORT

A bi-weekly reporting service for executives involved in business automation and data processing. Provides up-to-the-minute coverage of late developments affecting EDP users and suppliers. Backed by the nation-wide news-gathering facilities of Business Automation magazine. Published by Automation Consultants, Inc.

Use the coupon below for fast service.

26 issues—$30

Automation Consultants, Inc.
155 Fifth Ave. New York 10, N.Y.

Please enter my subscription to BUSINESS AUTOMATION NEWS REPORT for one year (26 issues) and send bill ☐ to my attention ☐ to company.

Name_____

Title_____

Company_____

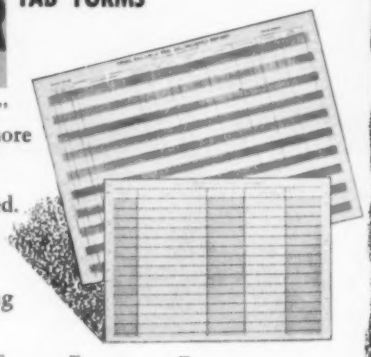
Address_____

City_____ State_____

How to Please the Boss...

SAVE EXECUTIVE TIME • REDUCE REFERENCE ERRORS • BUY NEW

HANO VERTI-BAR TAB FORMS



When reports go to "The Boss," why not make them error-free, more readable, quick and easy to use for comparisons and figure analysis. Everyone will be pleased. New Hano VERTI-BAR Tab Forms with shaded vertical or horizontal columns are the answer. They are worth looking into right away.

EASY REFERENCE
NO EXTRA COST
FREE SAMPLES

Shaded Columns

PHILIP Hano COMPANY, INC.

Main Office and Factory
Holyoke, Massachusetts

Branch Plant — MT. OLIVE, ILLINOIS

Please send FREE Sample Packet No. 2510

Name .....

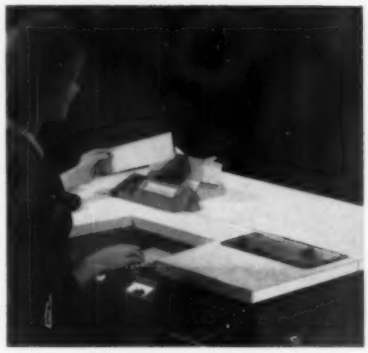
Company .....

Street .....

City ..... State .....

For More Information Circle Reader Service Card No. 186

Transit Encoder



A transit encoder designed by National Data Processing Corp. prints the bank transit number-routing symbol in magnetic ink characters to ABA specifications. The NDP transit encoder indexes the symbol in the full keyboard, the motor bar is depressed and the document is inserted in the transport. It is then positioned, counted, encoded and stacked in the same order as received — automatically. The document is always in view and accessible to the operator. The desk-size design also provides for storage space. Circle No. 117

Whiteprinter

A table model dry diazo whiteprinter has been added to the line of the Paragon-Revolute Div. of Charles Bruning Co. The Starlet 80 features higher speeds and a stronger exposure lamp, in addition to the equipment line's regular features. The machine will operate at speeds as high as 55 lineal feet per minute. Paper up to 20-in. wide and in any length will be accepted. The developer section uses a full-strength ammonia system, automatically fed by a solenoid pump. Circle No. 105

Office Copier

Smaller than a typewriter and weighing 12 lbs., the Transferon 9 copier is available from Ozalid Div., General Aniline and Film Corp. Priced under $100, the unit yields quality copies in sharp black and white photographic reproductions of originals up to 9-in. wide. Transferon 9 reproduces every color, whether pen, pencil, ballpoint, typed, printed or stamped from originals on any kind of paper, film or cloth. Circle No. 114

Paper Counter

Mark VI Paper Stack Counter is the newest model in the Vacuumatic line of paper and bank note counters introduced by Crosfield Electronics, Inc. Improvements on this imported item include the ability to count from the top of a 3½-ft. stack of paper on a skid right down to the bottom piece, while at the same time tabbing the paper at a programmed count. It can count approximately 300,000 sheets on an eight-hour shift. Other models are available for counting paper currency, labels, checks, sheets of stamps, smaller size ledger and looseleaf sheets, classified documents and charts and maps for security purposes. Circle No. 118

ANELEX
Wherever a data processing system is judged by the quality and volume of document production, no other equipment has been able to equal the speed and consistent quality or the reliability of Anelex High Speed Line Printing Systems.

Further information available upon request

ANELEX CORPORATION

157 Causeway Street, Boston 14, Massachusetts

For More Information Circle Reader Service Card No. 177

Is your figurework done blindfold?

If you removed the blindfold, you'd see a window that looks like this. It's a "Check Window" that shows a full registration of figures entered—*while there is still time for their correction.* Of all the ten-key adding machines made in America today, only the Friden has it. All others are "blind". The operator can't tell what figures she has entered until they are added or printed. Then it's too late.

These are other advantages: the exclusive "Natural Way" keyboard, designed to fit the user's hand perfectly.

An extra-wide platen for roll paper and wide forms. Automatic red-printing of negative values. Automatic credit balances. All live control keys. And special features for rapid, efficient multiplying.

Looking for accuracy, speed, versatility (*and* ruggedness) all in one machine? Call your local Friden man for a demonstration. Or write: Friden, Inc., San Leandro, California.

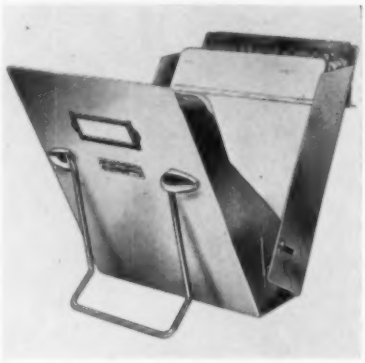
THIS IS PRACTIMATION: automation so hand-in-hand with practicality there can be no other word for it.

Friden

Sales, Service and Instruction Throughout the U.S. and World

For More Information Circle Reader Service Card No. 179

Portable Posting Tray

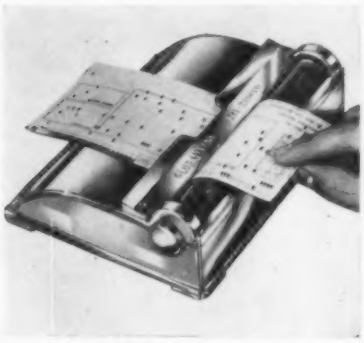


A portable posting tray for bookkeepers and accountants has been introduced by Wilson Jones Co. Porta-Ref is to house machine posting or writing board forms used by small offices or businesses, or a convenient portion of the records of larger installations. It can house accounts receivable, accounts payable, general ledger and payroll records, and is suited for cycle and charge account billing. Compact and easy to carry, the tray has two handles which turn down when the tray is open, becoming supports. Closed, the cover has a lock. Circle No. 115

Symbol Generator

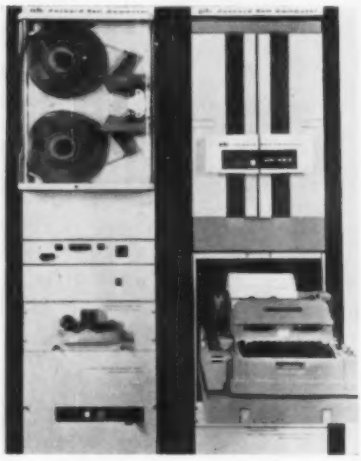
A new solid state character generator called Curviline has been developed by RMS Assoc., Inc. It combines continuous straight and curved lines to form all digits, all letters and many symbols in a fully transistorized 4 x 6 x 7-in. package. Curviline can be used with any cathode ray tube display. High character writing rates for the full alphanumeric unit (to 50,000 characters per second) are obtained by forming all symbols from simple formats. Circle No. 123

"Punch Card" Glue



A new glue product for adhering punched cards to cartons, cases and the like, has been developed by Glue-Fast Equipment Co., Inc. developed to be used with label gluers which apply a thin, even film of glue to the back of a punched card, the ready-for-use GF#55 liquid glue makes it possible to adhere cards as address shipping labels, product identification labels, inventory control labels, etc. Circle No. 119

Peripheral Equipment



A complete line of peripheral equipment for the PB250 computer has been announced by the manufacturer, Packard Bell Computer Corp., a division of Packard Bell Electronics. All of the peripheral units are designed for plug-in connection to the PB250. Included in the new line are magnetic tape units, a high speed buffer, high speed paper tape reader, high speed paper tape punch, card reader, digital graph recorder, high speed line printers, a battery power supply, an additional memory extension unit and two types of magnetic tape units. Circle No. 116

Tape Units

A transistorized, modular FR-100C instrumentation tape recorder by Ampex Instrumentation Products Co. features plug-in solid state electronics and power supply modules. Replacement of entire chassis is limited only by the time required to change the cabling, and system expansion or reorganization is accomplished without soldering. Also introduced is an Ampex portable instrument, the 175 lb. CP-100 (shown left), which has both laboratory and field capabilities. Circle No. 109

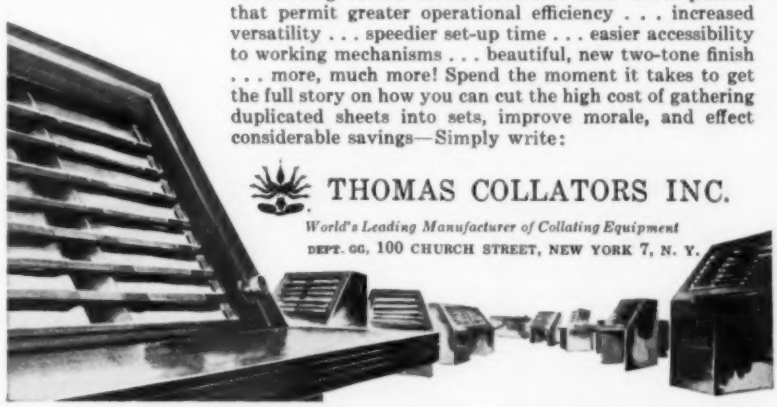
10 New Floor Models for '61

For 1961, Thomas Collators announce engineering and design advancements for their new line of 8, 10, 16, 20 and 32-sheet floor models that help surpass their own outstanding record of achievement. New developments that permit greater operational efficiency . . . increased versatility . . . speedier set-up time . . . easier accessibility to working mechanisms . . . beautiful, new two-tone finish . . . more, much more! Spend the moment it takes to get the full story on how you can cut the high cost of gathering duplicated sheets into sets, improve morale, and effect considerable savings—Simply write:

THOMAS COLLATORS INC.

World's Leading Manufacturer of Collating Equipment

DEPT. GG, 100 CHURCH STREET, NEW YORK 7, N. Y.

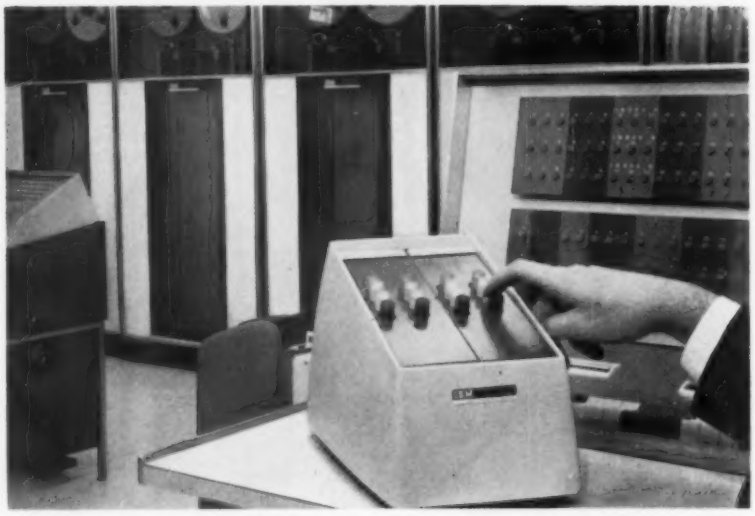


For More Information Circle Reader Service Card No. 180

Two-Way Radio

A two-way radio features a control unit used on a car's dashboard when the basic radio is placed in the trunk. It is the latest addition to General Electric's Communications Products Dept. Transistorized Progress Line of vehicular communications equipment. The unit is compact, lightweight for minimum space occupancy, measuring 2¼-in. deep, 2¾-in. high and 4⅝-in. wide. Three positions, off—standby—on, are controlled by a switch on the head and take minimum battery drain. Extruded aluminum is used for the control head. Circle No. 111

Automatic Tape Switching Unit



With a tape switching feature developed by International Business Machines Corp., a tape unit can be quickly alternated between two computers, between two tape channels on a single computer, or between a computer and an auxiliary tape input-out system. A magnetic tape drive can be switched to serve either of two tape channels by remote push-button control from the IBM 7155 switch control console. Particularly designed for an IBM 7000 series computer using an IBM 1401 for input and output, the 7155 switch control console (now available) can be used with any solid state IBM computer system utilizing IBM 729 tape drives. Circle No. 104

THIS 21-INCH NYLON CORD HOLDS OVER 1000 FEET OF CONTINUOUS FORMS

never slips or kinks

This is a special nylon post. It's from a Cesco Post Binder. Because one piece forms both sides and the back, it can never slip. Its strength is many times greater than necessary. Its ends are beveled so they are easier to push through the forms. It holds burst and unburst forms with equal security. It allows full visibility of data in the binder.

Cesco Nylon Post Binders are made in a variety of sizes, materials and capacities to meet your requirements. Your local Y&E or Cesco representative will show you samples and prices.

YAWMAN & ERBE

C. E. SHEPPARD CO. DIV.

44-27 21st St., Long Island City 1, N. Y.

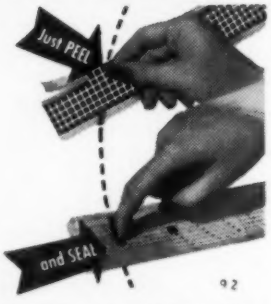
For More Information Circle Reader Service Card No. 181

CORRECT KEY-PUNCH ERRORS

with BRADY self-sticking

CORRECTION SEALS

Made of super-thin Mylar® . . . feeds freely, won't jam equipment. Highly visible opaque red color easy to spot. Fast to apply. Low in cost. Order red and transparent seals from stock; silver on special order. Send for free sample.



W. H. BRADY CO. • 715 W. GLENDALE AVE. • MILWAUKEE 9, WIS.

Manufacturers of Quality Pressure-Sensitive Tape Products • Est. 1914

SALES OFFICES: Atlanta • Boston • Buffalo • Chicago • Cincinnati • Cleveland Detroit • Hartford • Los Angeles • Milwaukee • New York • Newark • Philadelphia St. Louis • San Francisco • Bramoton, Ontario, Canada

For More Information Circle Reader Service Card No. 182

Here lie 707 rolls of paper tape shot full of holes by Tally Perforator #171

...Long may she run!

LIFE TESTING PROVES RELIABILITY OF TALLY READERS AND PUNCHES

The only way to really find out if a machine is reliable is to run it to death. That's what Tally engineers are literally doing with perforator #171 as part of a continuing program to prove and improve the accuracy and reliability of Tally tape equipment.

On October 20, 1960, perforator #171, chosen at random from a production run, started a life test with an alternate hole pattern verified by a Tally reader.

As of Feb. 13, 1961, perforator #171 had completed 70,700,000 cycles of accurate operation with only two minor mechanical break-downs. Repairs were made in a matter of minutes. This is a record of reliability that speaks for itself.

RELIABILITY IS ONE REASON TO CHOOSE TALLY

"State of the art" technical excellence is another. Only Tally punches give you the benefit of asynchronous operation. Speed is completely variable. A unique wire clutch lets you vary speed for slaving to other equipment which simplifies the design of logical systems.

Tally punches are priced from $1,000. Standard perforators operate at 60 characters per second and will punch 5, 6, 7, and 8 channels without modification. On special order up to 32 channels are available.

Only Tally readers give you the benefits of "full bit accountability." Using Form C switching, you get positive sensing of the presence or absence of holes. Reading rate is 60 cps in either direction – instantly reversible for rapid search and select. Readers have triggered tape feed readout with the rate controlled by external equipment. Reader prices begin at $595 for standard units capable of reading 5, 6, 7, or 8 channels without modification.

FOR A DEMONSTRATION OR MORE INFORMATION

You may arrange a demonstration or secure full technical information by calling your nearest field engineering office listed below or writing directly to factory.

P.S. *If you are having problems making complex multichannel programming tapes, call us about that too. We're making up 16 channel guaranteed error-free tapes for some of the nation's most sophisticated missile and satellite programs.*

TALLY
REGISTER CORPORATION
1310 Mercer Street • Seattle, Washington
Phone: MAin 4-0760

TALLY FIELD ENGINEERING OFFICES: ATLANTA, Georgia, TRinity 3-2475 • **BOSTON (Framingham) Massachusetts,** TRinity 2-2061 • **CEDAR RAPIDS, Iowa,** EMpire 5-6183 • **CHICAGO, Illinois,** KEystone 9-4838 • **CINCINNATI, Ohio,** BLackburn 1-2349 • **CLEVELAND,** Ohio, TUxedo 6-3535 • **DAYTON, Ohio,** BALdwin 3-9621 • **DENVER, Colorado,** SKyline 6-9455 • **DETROIT (Southgate) Michigan,** AVenue 5-3125 • **FORT WORTH, Texas,** WAlnut 6-4444 • **HOUSTON, Texas,** MAdison 3-4112 • **HUNTSVILLE, Alabama,** JEfferson 9-5552 • **IDAHO FALLS, Idaho,** JA 2-992 • **INDIANAPOLIS, Indiana,** Victor 6-1532 • **KANSAS CITY, Missouri,** JEfferson 1-7765 • **LOS ANGELES (La Canada) California,** SYlvan 0-3195 • **NEW YORK (Roslyn, Long Island) New York,** MAyfair 1-8660 **ORLANDO, Florida,** GArden 4-0730 • **PHILADELPHIA (Southampton) Pennsylvania,** LOcust 8-7078 • **SAN FRANCISCO (Palo Alto) California,** DAvenport 3-0128 • **SEATTLE, WASHINGTON,** EAst 3-8545 • **ST. LOUIS, Missouri,** PArkview 6-2233 • **ST. PAUL, Minnesota,** Midway 6-3443 • **WASHINGTON, D.C. (Arlington) Virginia,** JAckson 4-2272 • **WICHITA, Kansas,** MUrray 3-3751 • **WINSTON-SALEM, North Carolina,** PArk 3-3281.

10

For More Information Circle Reader Service Card No. 183

when a few missing items mean trouble...

Spiegel's Electrowriter® System saves one to three days on orders

Central Packing clerk at Spiegel, Inc. in Chicago writes stock-check order directly on Electrowriter Transmitter to...

...warehouse located sixteen city blocks away. Here, message is instantaneously recorded in writing on the Electrowriter Receiver. Stock clerk takes message, checks bins, writes back to Central Packing using the Electrowriter System.

Central Packing at Spiegel, Inc., Chicago, home of the Spiegel Catalog, processes over 6,000 mail orders every hour. A few incomplete orders can tie up space on the packing floor and cause delays for customers.

To verify open stock on missing items used to take up to five hours by house mail, often holding up shipment of an order until the next day or over a weekend. Now, with an Electrowriter System Central Packing keeps constant tab on open stock in three remote warehouses and verifies missing items in *less than 30 minutes.*

Achievement? Spiegel has maximized order handling, avoided congestion on the packing floor, and saved valuable manhours with its Electrowriter Communications System. Orders can not be lost or misplaced. A permanent, written record is obtained of every stock verification. And Quality Control personnel can check the disposition of any order at any time.

NOW..."Write By Telephone"

You can "Write By Telephone" over regular dial networks* or private lines for alternate written message and voice service. Find out how your company can increase its efficiency and cut costs with Electrowriter Communication Systems. Send for complete information.

*Electrowriter instruments are accepted for use over local and long distance facilities of the Bell System, General Telephone System, and independent telephone companies.

Electrowriter®
COMMUNICATION SYSTEMS BY
COMPTOMETER

®ELECTROWRITER
TRADEMARK REGISTERED
U. S. PATENT OFFICE

Comptometer Corporation, 5600 Jarvis Avenue, Chicago 48, Illinois. SPring 5-2400. Offices in Principal Cities.
For More Information Circle Reader Service Card No. 184

Copies On Request

Honeywell 400—"For Better Business Control" is offered by Minneapolis-Honeywell's Electronic Data Processing Div., outlining the applications and specifications of the medium scale Honeywell 400 Computer. Circle No. 131

Cut Filing Costs—Tab Product's brochure gives 12 detailed ways to cut filing costs using Spacefinder filing systems. Circle No. 132

The Paper Tiger—"How I Tamed the Paper Tiger in My EDP System" is a 28-page booklet by Autographic Business Forms, Inc. It examines common form handling problems in automation and offers practical solutions. Circle No. 133

Peripheral Equipment—Eleven peripheral units to the Packard Bell PB250 digital computer are pictured and specified in a catalog. Circle No. 134

Translator-Assembler Compiler—Philco makes available the 2000-TAC manual, regarding the automatic programming system for the Philco 2000. Circle No. 135

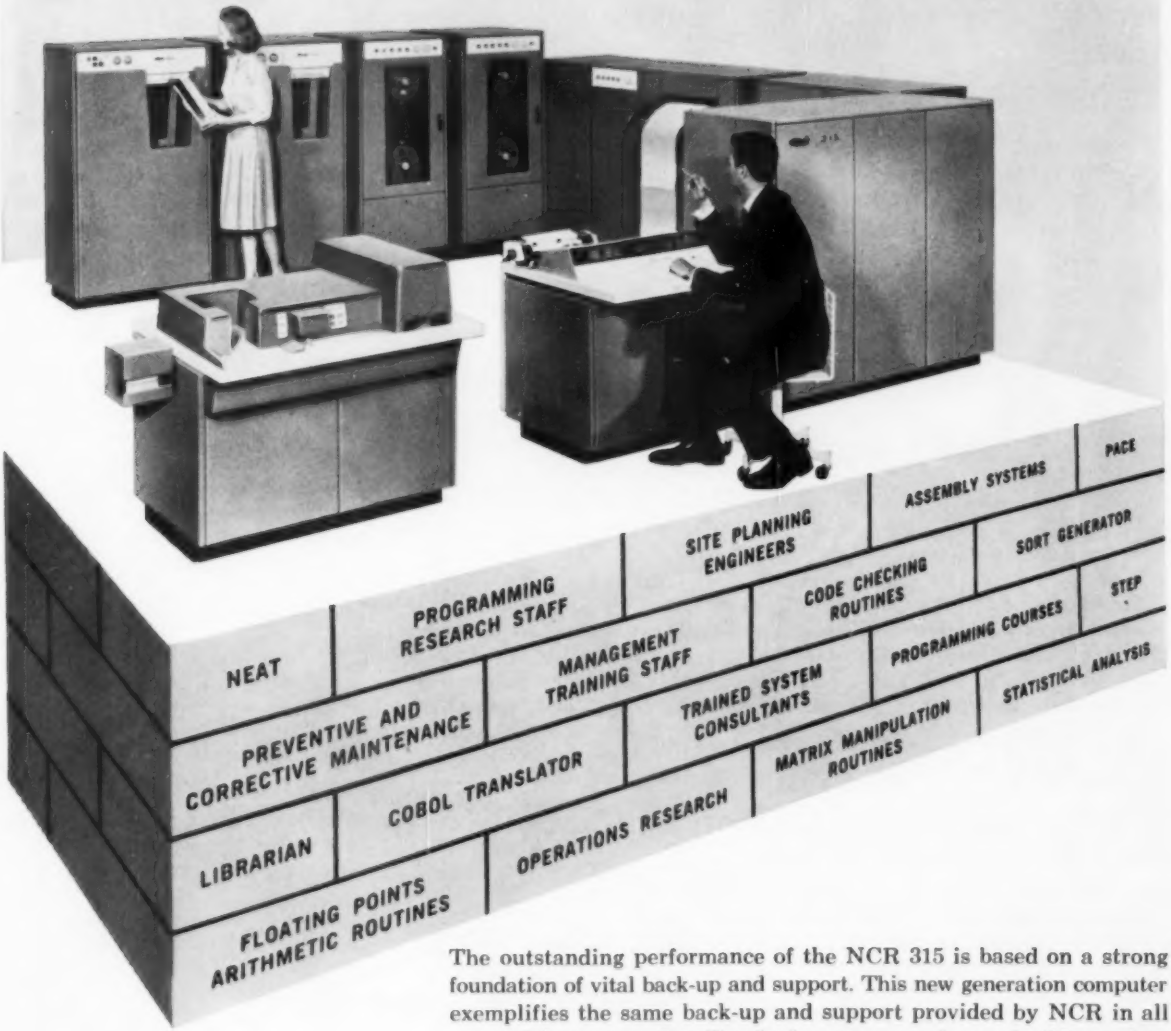
Check Trays—Special brochures on the DocuTray check handling equipment used to process MICR documents with specific systems, such as IBM, Burroughs and Pitney-Bowes. Circle No. 136

Tape Recorder Use—"207 Ways to Use a Tape Recorder" in business, professions and industry also deals with the handling and splicing of tapes and is offered by Magnecord of Midwestern Instruments, Inc. Circle No. 137

Findafact—Rese Engineering, Inc., 2510 data retrieval system is thoroughly covered in a brochure. Circle No. 145

Digital Instrumentation Line—Computer Measurements Co. makes available a complete catalog on the company's counters, timers and measuring units. Circle No. 139

THE *National* 315
is supported by a strong foundation!



The outstanding performance of the NCR 315 is based on a strong foundation of vital back-up and support. This new generation computer exemplifies the same back-up and support provided by NCR in all areas of data processing. Standard programs . . . from scientific routines to common English translators . . . to reduce programming time and cost. Professional instructors to provide complete customer training. Trained specialists to assist in system and site design. Preventive and corrective maintenance to maintain your NCR equipment in top operating efficiency. All provided with the 315 . . . all backed by a company with 77 years of experience in the office equipment business.

Investigate today! Call your NCR representative, a trained systems consultant, or write: Electronic Data Processing Systems and Sales, Dayton 9, Ohio.

THE NATIONAL CASH REGISTER COMPANY, DAYTON 9, OHIO
1039 OFFICES IN 121 COUNTRIES • 77 YEARS OF HELPING BUSINESS SAVE MONEY

*TRADE MARK REG. U. S. PAT. OFF.
National*
ELECTRONIC DATA PROCESSING
ADDING MACHINES • CASH REGISTERS
ACCOUNTING MACHINES • NCR PAPER

For More Information Circle Reader Service Card No. 185

NEWS

Delta Air Lines Installs SABRE System

An Atlanta press conference previews Delta's new SABRE reservation system over closed circuit television. The IBM system will link 66 cities.

Latest airline to unveil an automated reservation system (see article, right, and BUSINESS AUTOMATION for June, p. 50), Delta Air Lines previewed its plans for the installation of an IBM 9074 SABRE system during a recent Atlanta press conference.

The result of a two-year study into the airline's reservation needs, the system will be installed in April 1963 and will connect the Atlanta computer center with nearly 300 electronic agent sets throughout the country. Six Caribbean cities will be connected to the system via teletype lines, which also will carry messages to and from other airlines.

Heart of the SABRE system will be dual IBM 7074 computers. These will have on-line access to eight random access magnetic disk files.

Complete passenger records and data on availability, seat inventory and flight information will be maintained in the disk files. Magnetic tape will be used to store journals of transactions, cancelled records and other data that do not require immediate access.

SABRE will be able to check the passenger file for duplicate records and locate a passenger's record if his name is mispelled. Wait lists on all flights will be maintained and up-dated instantly when space becomes available. The system also will prepare and distribute complete manifests of passenger reservations for each flight, and can produce numerous management reports.

Eastern Air Lines Selects Reservation Center Site

Eastern Air Lines has selected Charlotte, N. C., as the site of its Univac 490 real-time airlines reservation system headquarters, to be completed by the end of this year. The site was selected, says Eastern, because of its central position within the airline's network.

While announcing the new reservation headquarters site, Eastern also announced the installation, in Atlanta, of its second Scan-a-graph arrival and departure announcement system which, by means of coaxial cables, transmits static information on flight arrivals and departures to public monitor units. Manufactured by Nord Photocopy and Electronics Corp., the system consists of six scanner units and 76 monitors.

Monitors built into the tops of ticket counters permit ticket agents to select any of six viewing channels.

A previous Scan-a-graph system consisting of five scanners and 45 monitors was installed at Miami International Airport.

Morgan Guaranty System Pays Dividends

Morgan Guaranty Trust Co., New York, produces 3,000 dividend checks an hour using an electronic processing line system. Combining IBM with Addressograph-Multigraph equipment, the system figures amounts, writes and signs checks, completes tax forms, stamps stockholders' names on checks and punches holes coding payment amounts. Morgan Guaranty's stock transfer division writes 12 million dividend checks a year from 230 companies—3.5 million stockholders.

Univac II Premiers Core and Drum Storage

The first medium-scale computer with both magnetic core and drum memory to be produced in the United States, Univac Solid-State II computer has been announced by Jay W. Schnackel, vice president and general manager of the Univac Division, Sperry Rand Corp.

Schnackel said one of the advantages to Univac II is the combination of core memory with the speed, efficiency and extensive storage capacity of drum memory, which places the user the multi-storage capacity of a large-scale computer in a computer at the medium-scale price range.

In terms of efficiency, the total memory capacity of Univac II is up to 110,880 digits, capable of handling most voluminous procedures. Information stored in the core memory can be accessed at the rate of 1.5 microseconds per digit.

To move data between drum and core storage in the same access time per digit (up to 2,000 digits in a single operation), a variable multi-word transfer feature is available.

Latency is eliminated.

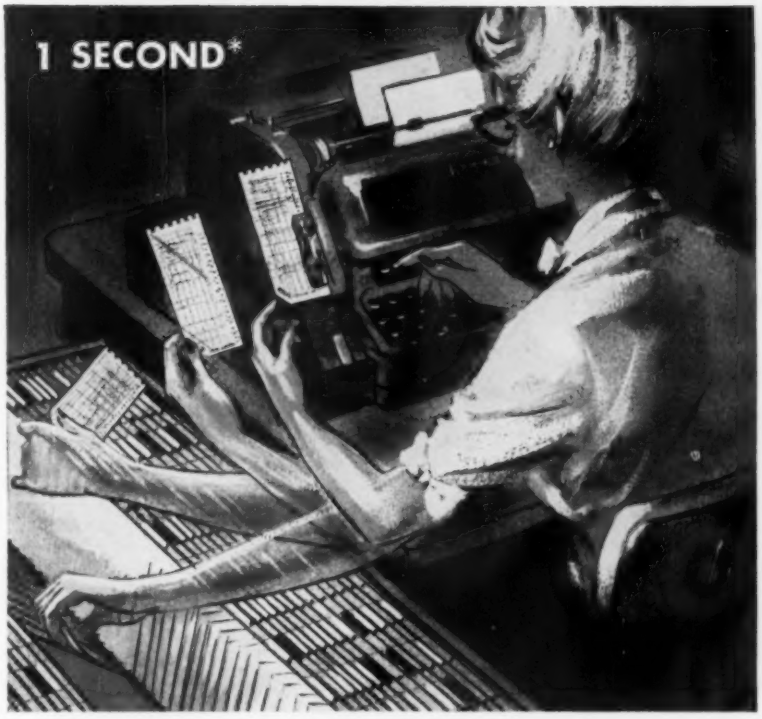
Minneapolis-Honeywell Adds Programming Unit

Several new developments in Minneapolis-Honeywell's fast-moving Data Processing Division have been announced by Walter W. Finke, president.

One such development is the formation of a Programming Systems Division headed by Dr. Joseph H. Levin to be responsible for the design and development of automatic programs.

An innovation designed to reduce the cost of preparing business data processing programs as much as 50 percent, the Honeywell computer programming system known as ARGUS (Automatic Routine Generating and Up-dating System) is completed and being supplied to the company's customers (see BUSINESS AUTOMATION for July, p. 26).

Simulators, or machine programs packaged on magnetic tape, will allow programs written for the IBM 650 and Univac computers to be run directly on the Honeywell 800 system through the use of ARGUS.



No idle machine time here.
Time from file to reading head—

*One second!**

VISIrecord's split-second record location has gained international recognition as "the world's fastest record-keeping system."

VISIrecord speed and convenience, minimizes floor space requirements, operator fatigue—and increases productivity and accuracy.

VISIrecord speed eliminates costly idle machine time on automated applications, and complements machine efficiency—the programmed edge-punched card input easily keeps pace with the most modern machines.

VISIrecord's split-second refiling, accomplished during machine's operating cycle, eliminates idle machine time.

Your VISIrecord Systems Specialist is ready and able to provide proof of related accomplishments achieved by thousands of satisfied customers.

Meanwhile write for Case Histories and list of satisfied companies in your industry.

*Observation of experienced operators by General Electric Co. Receiving Tube Dept.

VISIrecord, inc.
375 PARK AVENUE, NEW YORK 22, N. Y.

VISIrecord

© 1961 VISIrecord, inc.

Systems Specialists in Principal Cities

For More Information Circle Reader Service Card No. 188

Phone Company Uses Optical Scanning

New York Telephone Co. has placed the largest single order yet received for Farrington optical scanners. Readers will be placed in 17 accounting districts throughout the state, the company said. Billing and collection, with scanners reading perforated paper payment stubs for data, have been tested by the firm since October 1961.

Offer New IBM Softwear

A new system which frees users of IBM 1401 computers from detailed computer codes and allows them to specify desired reports in statements similar to those used on an IBM 407 accounting machine has just been announced.

The FARGO system compiles 1407 programs for the automatic preparation of business reports in less than 30 seconds, according to IBM. Report specifications are fed into the computer on punched cards.

IBM says FARGO can be learned in about eight hours, even without previous programming knowledge.

OEMI Becomes BEMA

Office Equipment Manufacturers Institute, a 50-member trade association, has officially changed its name to Business Equipment Manufacturers Assn., according to Harry C. Anderson, BEMA president.

Office Equipment Manufacturers Exhibits, Inc., a subsidiary, becomes Business Equipment Manufacturers Exhibits, Inc.

Consisting of three separate, but integrated divisions—a Data Processing Group, an Office Machines Group and an Office Equipment Group—the association has moved to the Pfizer Building, 235 East 42nd St., New York 17.

Brinkley To Head NAA

Rawn Brinkley, assistant secretary of the National Assn. of Accountants since 1954, has been elected secretary of that organization, succeeding Arthur B. Gunnarson, who retired June 30.

The association has 50,000 members affiliated with 171 chapters.

New Society Announces Chairmen, Meeting Sites

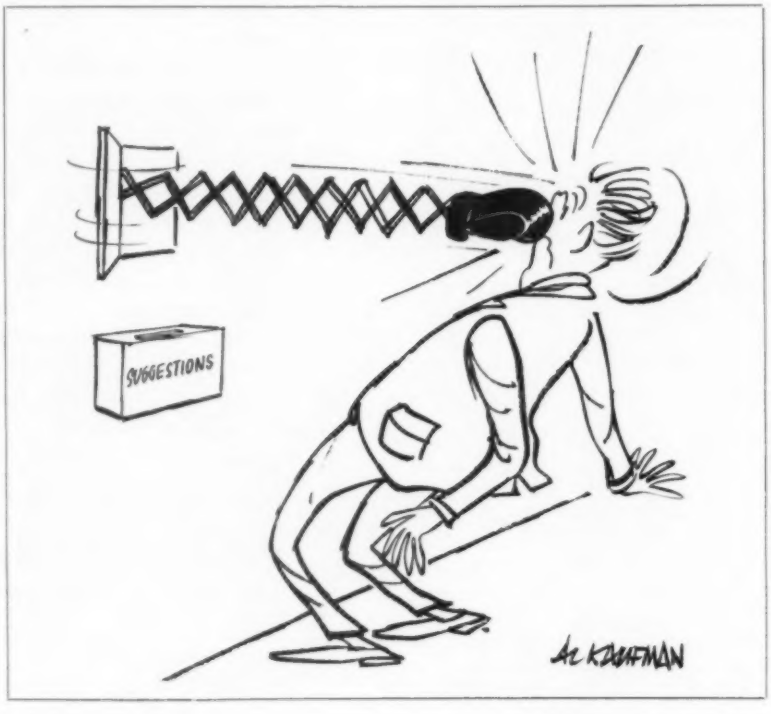
The American Federation of Information Processing Societies (AFIPS), successor to the National Joint Computer Committee, has announced the appointment of many committee chairmen and the selection of conference dates and sites through Fall 1963.

Appointed treasurer of the new group, founded at the last Western Joint Computer Conference, is Frank Heart, Lincoln Laboratory. Committee chairmen just announced include Don Madden, System Development Corp., public relations chairman; Claude Kagan, Western Electric Co., awards chairman; and Walter Carlson, E. I. duPont Nemours & Co., by-laws and constitution chairman.

Chairmen for committees on admissions, conference and planning will be named soon.

According to Dr. Willis H. Ware, AFIPS chairman, the 1961 Eastern Joint Computer Conference will be held in Washington, D. C., December 12-14, as planned. Thereafter, a new name for the conferences will be in effect.

The May 1962 conference will be held in San Francisco; Spring 1963 conference, in Detroit; and Fall 1963 conference, in Los Angeles.



Business Calendar

September 11-13—National Convention of the Assn. for Bank Audit, Control and Operation, Conrad Hilton Hotel, Chicago. Write: Jack Craddock, NABAC, 38 S. Dearborn St., Chicago 3.

September 11-15—Instrument Society of America's 16th Annual Instrument-Automation Conference & Exhibit will be held in the Biltmore Hotel (c) and the Memorial Sports Arena (e), Los Angeles. Contact: Ralph Stotsenburgh, promotional services, 530 William Penn Pl., Pittsburgh 19.

September 28-29—Fourth Annual National Conference and Technical Exhibit of the American Production and Inventory Control Society, Pick-Congress Hotel, Chicago. National Headquarters: 330 S. Wells St., Chicago 6.

October 4-5—Buffalo, N. Y., Chapter of the National Assn. of Accountants sponsors the 26th Biennial Regional Business Show in the Memorial Auditorium.

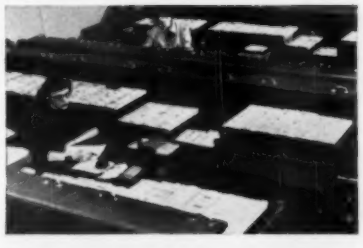
October 8-11—International Systems Meeting of the Systems and Procedures Assn. will be held in Cleveland, Ohio, at the Statler-Hilton and Pick-Carter Hotels. For more information: Lawrence E. Melick, Secretary, 1961 ISM, c/o Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10, Ohio.

October 12-13—Third Annual Conference, Indianapolis and Ft. Wayne Chapters of National Machine Accounting Assn., at the Marott Hotel, Indianapolis, Ind.

October 16—Assn. of Data Processing Service Organizations holds a West Coast Management Symposium at the Ambassador Hotel, Los Angeles. Contact: W. H. Evans, 1000 Highland Ave., Abington, Pa.

October 24-27—The National Business Exposition "Execurama" at the Shrine Exposition Hall, Los Angeles. Contact: George Stromme, The Stromme Co., 1350 North Highland, Los Angeles 28.

Here's the place to house those active records!



find out about all the advantages of Rol-Dex equipment. It's built to fit your system, your form size, your volume, your space, your expansion plans.

ROL•DEX record housing provides the needed features:

SPEED—Quick access—all records are immediately available—records roll to the clerk (seated, of course)—no waiting for hidden, motor-driven trays to come into place. And random reference is no problem.

EFFICIENCY—Rol•Dex can easily be organized into work centers that may include machines and all tools needed for an automated system. Provides better control, too.

ECONOMY—Great capacity that can be handled by fewer personnel because of speed of reference. Floor space is also saved in most cases and supervision is easier.

Rol-Dex Division

ROL-DEX

pat. and pats. pending

WATSON MANUFACTURING COMPANY, Inc.
Jamestown, New York

WATSON MANUFACTURING COMPANY, INC.
Rol-Dex Division, Dept. A-9 Jamestown, New York

☐ Please send literature.

☐ Have consultant call me for appointment ..... (phone)

Name ..... Title .....

Firm .....

Street .....

City ..... State .....

For More Information Circle Reader Service Card No. 189

Federal Reserve Bank Completes First Study

Five Federal Reserve banks are engaged in a study of electronic check-processing machines, attempting to determine which make is best suited to the needs of the nation's 12 Federal Reserve banks and their 24 branches.

First of the five to complete its six-month pilot study is the Federal Reserve Bank of Philadelphia, which has been testing the IBM 1412-1401 system, capable of processing 300,000 documents a day.

The Federal Reserve Bank of San Francisco is testing a high-speed, vacuum-fed system manufactured by National Data Processing Corp.

Capable of controlling three documents processors simultaneously, the NDP system has a Dictionary Look-Up Unit for the storage of up to 250,000 bits of information. Checks are picked up, magnetized, read, endorsed, numbered, sorted and totalled at a rate of 72,000 per hour. Three runs through the system's two processors will sort checks into individual stacks for as many as 4,096 individual banks.

The Federal Reserve Bank of Boston is testing an NCR 304 system which will handle the 305 million checks that flow into the bank and its branches in six New England states each year.

Federal Reserve banks in Chicago and New York are testing other check-handling equipment.

U. S. Census Statistics Available To Industry

At the cost of reproduction, the Census Bureau now will provide summary population and housing statistics for small geographic areas.

Available in reproduced statistical tables, microfilm and magnetic tapes, the data include statistics yet to be published, figures for areas for which the bureau does not expect to publish reports and material that will supplement that which is published.

Magnetic tapes are produced for computers compatible with the bureau's Univac 1105.

Open 'Project Lawsearch'

W. H. B. Thomas (left), "Project Lawsearch" director, with Frederick Jonker.

Jonker Business Machines, Inc., working on contract with the Council of Library Resources, Inc., is developing a pilot indexing program for the legal profession. Called "Project Lawsearch," the information retrieval system will index 4,500 cases and other materials relating to the field of motor carrier law.

for your information

. . . about new products, or items advertised in this issue, use the convenient reader's service card. The BUSINESS AUTOMATION Service Bureau will forward your request to each manufacturer promptly, saving you time, effort and money. This is an added free service for readers of

*BUSINESS AUTOMATION

NOW!
Record Computer Usage
AUTOMATICALLY

WITH THE NEW SERIES
RJ TIME RECORDER

OBTAIN *actual processing time of EDP systems*
ELIMINATE *overcharges due to inaccurate records*
IMPROVE *accuracy in system cost accounting*

Each RJ series Time Recorder is designed to fit a particular type of computer.
The RJ series Time Recorder connects directly to existing computer circuitry – readily installed.
Low one-time cost.

More information is available on request

EXCLUSIVELY BY STANDARD INSTRUMENT CORP.

standard INSTRUMENT CORPORATION
657 BROADWAY, NEW YORK 12, N.Y.

For More Information Circle Reader Service Card No. 190

ADVERTISERS' INDEX–September, 1961

Acco Products	2nd Cover
American Data Machines, Inc.	18
American Type Founders	40-41
Anelex Corp.	63
Automation Consultants, Inc.	10-11
Avery Label Co.	8
Bankers Box Co.	75
C. L. Barkley & Co.	14
Bendix Computer Division	12
Brady, W. H., Co.	66
Charles Bruning Co., Inc.	3
Business Automation	39, 62, 74
Business Electronics, Inc.	16
Comptometer Corp.	68
The Computer Center	16
Friden, Inc.	64
General Dynamics Electronics	57
General Electric Co., Computer Dept.	48-49
Graphic Systems	14
Hano, Philip, Co.	62
International Business Machines Corp.	58-59
Mac Panel Co.	4, Back Cover
Minnesota Mining & Mfg. Co.	9
Moore Business Forms	51
National Cash Register Co.	69
Paper Manufacturers Company	53
Radio Corporation of America	15
Remington Rand Univac, Div. of Sperry Rand Corp.	6-7
Reynolds & Reynolds Co.	47
Royal McBee Corp.	3rd Cover
Shelby Salesbook Co.	8
Standard Instrument Company	74
The Standard Register Co.	17
The Staplex Company	75
Tab Products Co.	19
Tally Register Corp.	67
Teletype Corp.	60
Thomas Collators Inc.	65
Transcopy, Inc., Div. of Anken Chemical & Film Corp.	13
Visirecord, Inc.	71
Watson Mfg. Co., Inc., Rol-Dex Div.	73
Western Union	54-55
Wright Line: Div. of Barry Wright Corp.	35-36
Xerox Corp.	43
Yawman & Erbe, C. E. Sheppard Co. Div.	66

ALL YOU NEED TO KNOW
ABOUT RECORD STORAGE
IN 2 **FREE** BOOKLETS

Send for your FREE "Manual of Record Storage Practice" telling you how long to retain or destroy business records. It outlines an easy-to-do storage plan for inactive records.

With the Manual we will send our New Catalog on Record Storage Filing Equipment. Learn the facts that every businessman should know about record storage.

Clip ad to your letterhead and mail to:
BANKERS BOX CO.
Dept. BA-9
Record Specialists Since 1918
2607 N. 25th Ave., Franklin Park, Ill.
Circle Reader Service Card No. 192

GUARANTEED TO
REDUCE YOUR
STAPLING COSTS
50% OR YOUR MONEY BACK!

Why pay for hand-stapling office overhead *needlessly?* Try the amazing Staplex Automatic Stapler for 10 days—*at our expense.* We guarantee it will cut your present costs in half... or you don't pay a cent!

Over 100,000 users have *proved* Staplex's economy. Machines staple automatically—as fast as you feed them. No training needed. No drudgery. Write for details of this unique money-saving offer now.

The STAPLEX Company
778 FIFTH AVENUE, BROOKLYN 32, N. Y.
World's Largest Manufacturer of Electric Staplers
Circle Reader Service Card No. 192

EDITORIAL

A Bad Batch of Statistics

We have yet to see any indication that the Labor Subcommittee on Unemployment and the Impact of Automation—headed by Rep. Elmer J. Holland (D-Pa.)—is interested in any testimony that would disagree with its own premise: that automation is The Great American Evil.

Rather conclusive evidence of the committee's bias against automation is the fact that its "star witness" on office automation has been Howard Coughlin, president of the Office Employes International Union (BUSINESS AUTOMATION, October 1958), a man who has been viewing automation with alarm for many years, hoping to scare some white collar workers into his fold.

Even with vocal assistance from his friend, James Hoffa, Coughlin's success in this area has been negligible, and therefore, it is not surprising to see him jump aboard the Holland bandwagon. It was Coughlin's figures, in fact, that Holland used in his now-famous, science-fiction report that automation had eliminated 25 percent of the clerical and office jobs in the past five years and that it would kill an additional four million jobs in the next half-decade.

In defense of these "statistics," Coughlin cited Bureau of Labor figures which estimated that each computer affects 140 jobs and that 25 percent of those jobs are abolished. Combining these figures with an estimate that 10,000 computers will be installed in 1961, Coughlin presumed that 1.4 million office jobs will be affected by automation this year and that 350,000 of them will be eliminated. (Asked how these figures total up to a loss of four million jobs in the next five years, Coughlin said that the higher figure "can be justified" by projecting the increase in computer installations at a rate in excess of 10,000 per year.)

Coughlin has supplied the Holland committee with a bad batch of statistics. To prove this, it is only necessary to point out that the Bureau of Labor's own study of some 20 companies who had installed computers indicated that "despite the reduction of labor requirements for the tasks performed by computers, total employment of the offices as a whole rose." The actual rate of increase in 17 of these offices was seven percent.

We have no argument with Rep. Holland as to the need to uncover all the facts regarding the influence of automation on employment; nor do we challenge the committee's prerogative to call any witness it may choose. But Holland does have a responsibility to hear all sides of the question and to seek accurate testimony, rather than propaganda. Based on his performance to date, it would appear that Chairman Holland has chosen to ignore this responsibility.

Arnold E. Keller

THIS IS THE NEW ROYALTYPER,™ A 100% BETTER WAY TO DO AUTOMATIC MASS TYPING JOBS THAN OLD TWO-UNIT SYSTEMS.

You claim so much. Be specific. What's new and better about it? This: it's single-system. It does its punching and its typing all with one simple standard keyboard. See the keyboard in the picture down there? That's it. The Royaltyper tape is an exclusive, too. Its card width is designed for ease of handling and storage economy. Another standard feature: automatic tape reproduction, to permit easy revisions and updating. **Is punching any easier than with other automatic typewriters?** About 100% easier. Any typist can do it without special training. **Tell how.** She rolls in a piece of paper, flicks a switch, types the first letter, just as she'd type any letter. This automatically punches the tape, and the operator sees every word she punches. **You mean there's no blind punching?** No blind punching as in outmoded 2-unit systems. Then the machine takes over—at 135 words per minute all day long. Number of copies: unlimited. If you ever have personalized first copy mass mailings to get out, and you're tired of paying the price of independent punching or operator training . . . **Where can I get literature?** I'm going to tell you: get in touch with Royal McBee Corp., 850 Third Ave., New York, N.Y.

©1961 ROYAL MCBEE

ROYAL®

SPECIALISTS IN BUSINESS MACHINES

A PRODUCT OF ROYAL McBEE CORPORATION, WORLD'S LARGEST MANUFACTURER OF TYPEWRITERS.

For More Information Circle Reader Service Card No. 193

MAC PANEL *computer tape* . . . ASSURED PERFORMANCE

Division of Adams-Millis Corporation

MAC Panel Computer Tape is produced under rigidly controlled, scientific conditions to give you assured tape performance. *Manufactured for Performance* through the use of an improved oxide formulation that insures the presence and retention of the most critical magnetic properties as well as the prime physical characteristics: permanent coating adhesion . . . hard shell toughness . . . and flexibility under all conditions. *Tested for Performance* using procedures that far exceed the normal criterion for attention to detail. Every element in the new oxide formulation is tested before and after blending . . . every reel of tape produced is subjected to thorough tests which insure the quality of MAC Panel Computer Tape. *Packaged for Performance* in clean, dust-proof containers hermetically sealed inside a plastic envelope. This entire unit is shipped to you in a specially designed, shock absorbing package that features a "handy-handle" for carrying convenience. *Write for Free Booklet:* "MAC Panel Computer Tape . . . Assured Performance."

MAC PANEL COMPANY ■ High Point, North Carolina MAC/PANEL

For More Information Circle Reader Service Card No. 194